

**THE INDO-EUROPEANIZATION
OF NORTHERN EUROPE**

THE INDO-EUROPEANIZATION OF NORTHERN EUROPE

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In Memoriam

Marija Gimbutas,
who fully understood the need
for inter-disciplinary scholarship



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ABBREVIATIONS

Alb.	Albanian	NE	New English
Arm.	Armenian	NHG	New High German
Av.	Avestan	Norw.	Norwegian
Bret.	Breton	OCS	Old Church Slavic
Chin.	Chinese	OE	Old English
Dan.	Danish	OFris.	Old Frisian
Du.	Dutch	OHG	Old High German
Est.	Estonian	OIc.	Old Icelandic
Far.	Faroese	OInd.	Old Indic
Finn.	Finnish	OIr.	Old Irish
Fris.	Frisian	ON	Old Norse
Gk.	Greek	OPruss.	Old Prussian
Gmc.	Germanic	OS	Old Saxon
Goth.	Gothic	Osc.	Oscan
Hitt.	Hittite	Oss.	Ossetic
Hung.	Hungarian	OSwed.	Old Swedish
Ion.	Ionic	PGmc.	Proto-Germanic
Lapp.	Lappish	PIE	Proto-Indo-European
Lat.	Latin	Pol.	Polish
Latv.	Latvian	Run.	Runic
Lith.	Lithuanian	Russ.	Russian
Liv.	Livonian	Skt.	Sanskrit
MDu.	Middle Dutch	Swed.	Swedish
ME	Middle English	TA	Tocharian A
MIr.	Middle Irish	TB	Tocharian B
MLG	Middle Low German	Umb.	Umbrian
Mordv.	Mordvin	W	Welsh
Myc.	Mycenean		

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With any conference a large number of people contribute to its success. The international, interdisciplinary conference from which these proceedings were generated has proven to be no exception. The Lithuanian co-presidents of the conference, Gintautas Česnys, Dean of the Medical Faculty of the University of Vilnius and Adomas Butrimas, Vice-Rector of the Vilnius Academy of Art, did a splendid job of arranging the facilities where the papers were presented, tours of their beautiful capital city and its environs, entertainment, meals and of course comfortable lodgings, which were so welcome after long, full days. The committee that worked with them, often behind the scenes, — Saulė Urbanavičienė, Renata Rizgelienė, Arūnas Barkus, Svajūnas Barakauskas and Arvydas Šaltenis — could not have been more helpful or cooperative. The generosity of the University of Vilnius and its Rector, Rolandas Pavilionis, was truly extraordinary, as was that of the Vilnius Academy of Arts, the Lithuanian Culture Foundation and the Lithuanian Anthropological Society; to all we extend our deepest gratitude as well as to the University of California, Los Angeles. It is our special pleasure to acknowledge the generous financial support provided by the Lithuanian Open Society Fund. We also extend thanks to Judith Kendall for reading the final typescript and catching errors which had eluded the editors' eyes, thereby improving the appearance of the volume.

When, upon the death of Marija Gimbutas, the publication of these proceedings became our responsibility the editorial task was considerably lightened by her foresight. Always an active writer who strove to get her own and others' ideas before the scholarly audience, Professor Gimbutas' initial intentions included plans to publish the papers from the conference as a monograph within the series created by the *Journal of Indo-European Studies*, the interdisciplinary journal she had helped found in 1973. The indefatigable cooperation of the current managing editor, her long-time friend and American co-chair of the conference Edgar Polomé and a generous grant from another friend of long standing, A. Richard Diebold, Jr. to the Friends and Alumni of Indo-European Studies at UCLA made the fulfillment of her wishes the reality which we now offer to the reader.

K. J-B. and M. E. H.

INTRODUCTION

It is no accident that Vilnius was selected as the site to hold a conference on the Indo-Europeanization of Northern Europe. This was the third Indo-European conference planned by the late Marija Gimbutas, the first two having been held in Dubrovnik 1984 and Dublin in 1989. It was in Dublin that Vilnius was chosen and for the next five years despite failing health, the publication of two books, several articles, numerous reviews, and the inconvenience of a major earthquake that rocked her Los Angeles home, Marija continued to plan the Vilnius conference. The chance to bring an international conference to her homeland was a sustaining force in her last years, and her compatriots, represented by Gintautas Česnys and Adomas Butrimas saw this conference as an occasion to honor her. While most of the world knew the name Marija Gimbutas, the form of the Lithuanian surname which she adopted upon her arrival in the United States, she was better known in Lithuania as Marija Gimbutienė, the form that a married woman would use. However she was known, her name was recognized by scholars in both the East and the West, and attracted archaeologists and linguists, mythologists and anthropologists to come to Vilnius and share their ideas and research.

As 1994 approached, her health began to fail more rapidly, and she became more anxious for the Vilnius conference to take place. She knew it would be her last conference and wanted her career to end where it had begun, in the land she loved so much. At the time of her death, the plans for the conference were in full swing and there was never a question that it would take place. When they learned of her death on February 2, 1994, her Lithuanian compatriots suggested only one change in the planning. The conference which they had hoped would serve as a tribute held in her honor would now be one held in her memory. Nevertheless, this volume is not meant as a *Gedenkschrift* but as a continuation of work. She, of all people, would want work to continue.

The discipline of Indo-European studies should be thought of as a collective noun. Much like a family it is made of a number of members who do not always see eye to eye on every issue. Throughout this volume there are papers which come to different conclusions and at times contradict one another, but from inception, this conference was not planned as a chorus but as a dialogue. Such a

dialogue is especially important when tackling the complex issues of Northern Europe. Unlike the Classical world, the history of Northern Europe begins very late. Our sources are often hostile and always sparse. Northern Europe presents a remarkable contrast of Indo-European languages from the highly evolved Celtic in which major phonological and morphological attrition has occurred to the archly conservative Lithuanian where even the dual has survived. The dynamics that would admit such diversity of development must necessarily be of a complex nature, not soluble by any single discipline.

The following papers have been divided for convenience into four sections, archaeology, linguistics, mythology and physical anthropology, but this is an artificial and editorial division for most overlap two or more of these disciplines. Inevitably each of these disciplines has its own conventions, and we have striven to harmonize them so that users of this volume may profit from insights that originate in disciplines other than their own.

For bibliographic purposes, the spelling of Cyrillic references has been, whenever possible, romanized according to the system presented in the *American Heritage Dictionary*, which is based on that used by the U.S. Board on Geographical Names. However, such consistency turns to pedantry when applied to common toponyms such as Dnieper (rather than Dnepr) or to personal names. For the last, especially, we have retained any spelling that represents the personal preference of its holder but have inserted a standardized form in brackets. In the same spirit, we have allowed the designations of archaeological entities to stand as they are given by the various authors; often such differences are no more than variant translations or calques of a well-established name, for example the Russian term *Yamnaya* often goes by *Pit Grave*. We have also, whenever possible, employed the abbreviations for languages found in the *American Heritage Dictionary*. Consensus, however, is not to be achieved by editorial uniformity but only by a broad understanding of the issues and concerns that all scholars, regardless of discipline, are confronted by when they contemplate the deep and lasting changes that ushered in the Indo-Europeanization of Northern Europe. We hope that this volume contributes to a better understanding of these problems.

M. E. H. and K. J-B.

Archaeology

The Indo-European Homeland Problem: a Matter of Time

J. P. Mallory
Queen's University, Belfast

For one hundred fifty years scholars have sought to determine the location of the Indo-European homeland, the area in which a population spoke Proto-Indo-European, a broadly defined language or group of dialects that later developed into the various Indo-European languages. Just about every conceivable place and argument has been proposed — from the North Pole to the South Pole and from the Atlantic to the Pacific — and yet we seem to be no closer to a final agreed solution than we were a century ago. In fact, solutions to the Indo-European homeland problem seem to have all the vitality of Thor's goat; no matter how many times one is butchered, it always seems to come back again alive and well. When a problem has remained unresolved for so long, we are clearly dealing with a methodological crisis of extreme, perhaps impossible, difficulty (cf. Dressler 1965).

As I have emphasized on a number of occasions (e.g. Mallory 1976, 1989a), it is quite impossible to assess the validity of any argument of *where* the Proto-Indo-European language was spoken unless we can determine *when* it was spoken. Solutions have ranged from the Palaeolithic (Bryussov 1958:23-26) to as recent as the second millennium BC (Drews 1988:136-157). Colin Renfrew observes that some linguists have dismissed his own theory of a seventh millennium "origin" as "too early" (Renfrew 1990:19) while I have rejected Robert Drew's second millennium date as far too late (Mallory 1989b:103). But what is too early and what is too late? And who is the temporal referee in our quest for the Indo-European homeland? It is my intention, therefore, to examine the temporal aspects of the Indo-European homeland problem particularly with regard to how we date a prehistoric linguistic entity and evaluate the various solutions as to its location.

The Indo-European Homeland Problem: A Matter of Time

Dating Proto-Indo-European

It should be made clear at the outset that the entire problem of chronology frequently involves a disciplinary conflict between linguistic and archaeological primacy. Witness the comments of Aron Dolgopolsky:

I completely disagree with Gimbutas' statement to the effect that "it is quite obvious that the solution of Indo-European origins — on a spatial and temporal basis — is in the hands of the archaeologists" (Gimbutas 1978:25 [*recte* 1974:287]). It is, on the contrary, far from self-evident how archaeologists utilizing the non-linguistic means at their disposal can determine what language the bearers of some Pit-Grave culture or Battle-Axe culture spoke. On the other hand, once the spatial and temporal parameters of the putative homeland have been identified on the basis of linguistic evidence, the archaeologists can set about the task of deciding which civilisation (archaeologically attested culture or cultures) can be plausibly associated with pIE (Dolgopolsky 1987:7).

It seems to me that the origin of the Indo-European languages is fundamentally a problem of linguistic *prehistory* which makes it equally elusive to both disciplines. Archaeologists may be very much at home in prehistory, but there is no way in which the archaeological record can be read as a clear expression of a linguistic entity. On the other hand, left to only their own devices, the limitations of linguists in a prehistoric and hence pre-textual context is all too palpable since once linguists wish to anchor their fundamentally abstract reconstructions in real time or a real place, they are at the mercy of disciplines other than their own. And even when both archaeologists and linguists seem to be heading toward a common goal, they seem to find it difficult to arrive at the same time. For example, while those supportive of an Anatolian homeland may draw comfort from the fact that Colin Renfrew (1987:269), Susan and Andrew Sherratt (1988), Tomas Gamkrelidze (1990:9) and Robert Drews (1988:148-149) have all located their Proto-Indo-Europeans in the same general area, the difference in their dates for the homeland (Renfrew — the seventh millennium BC; Sherratts and Gamkrelidze — the fifth millennium BC; Drews — the second millennium BC) are so fundamentally different

that they are clearly not talking about the same people and language. Alternatively, the territory north of the Black and Caspian Seas that Marija Gimbutas championed for so many years as the homeland of the Indo-Europeans in the fifth and the fourth millennia BC is often taken in Russian and Ukrainian literature as only the seat of the much more recent Indo-Iranians. We should no more accept sizable temporal differences in a homeland solution than we should applaud a linguist or an archaeologist who derived the English language in North America from Neolithic Britons.

Returning to Dolgopolsky's statement, I am obviously very sceptical that linguistics alone can provide the necessary "temporal parameters of the putative homeland" (and I think many linguists would be embarrassed by this claim as well). If we must locate the homeland in time, we must do so in absolute time with meaningful calendar dates. With respect to the Indo-Europeans I know of only three methods that have sought to provide absolute dates on the basis of linguistic evidence alone — external contact dating, glottochronology and informed estimation.

The first technique is seldom used today although it may be implicit in some of the discussions centering on Indo-European homelands in southwest Asia. These involve the acceptance that Proto-Indo-European received loan words from Semitic or Sumerian and that the form of the loan word can itself be dated in the written record, e.g. long ago Günter Ipsen (1923) argued that Proto-Indo-European borrowed its word for star **(ə)ster* [*H₂ost-*] from Akkadian *istar* and not the common Semitic form **astar*; therefore, Proto-Indo-European unity had existed at least until 2000 BC when *istar* first appears in Akkadian texts. This technique has little utility since it presupposes linguistic relations that will in themselves be controversial and, moreover, is only strictly operational against the written record of Sumerian and Semitic or possibly Hurrian, i.e. from the third millennium BC onwards. To apply it to still earlier periods, i.e. assigning dates to Proto-Indo-European on the basis of supposed Proto-Semitic, North Caucasian, Uralic or other contacts seems even less creditable since it assumes that we are able to assign absolute dates to other languages' prehistory any better than Indo-European.

As for glottochronology, the calculation of age separation between two or more genetically related languages on the basis of their retention or loss of a "basic vocabulary," there is little doubt that under certain conditions the technique seems to provide dates that can

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be generally verified by the written record or, in the case of Oceanic languages, by radiocarbon dates indicating the earliest occupation of various islands (Rouse 1986). Whether it has the utility argued by Christopher Ehret in the journal *Antiquity* (1988), on the other hand, is questionable and there is absolutely no problem in finding linguists such as George Trager who could only conclude that "as a determiner of time depth in linguistics, the method is useless" (Trager 1972:175) and many other linguists have also disparaged the technique, e.g. Crossland (1972:47); Bynon (1977:269-270). Now this may not mean that the method is utterly useless, but for an archaeologist, accustomed to having radiocarbon dates quoted at a realistic precision, the technique at best would seem capable of little better than gross order of magnitude estimates. Take for instance Ehret's own claim that "Indo-European divergence and spread was a process beginning, at the earliest, roughly in the range of the second half of the the fifth millennium BC, give or take a few centuries, and that the early stages of the process continued through the the fourth and perhaps the third millennia." How is an archaeologist to understand this in absolute terms? Do we look for the expansion (breakup) of an archaeological culture at ca. 4500 BC? Should we look for population movement still earlier, perhaps expansion at 5500 BC and allow 1000 years for the earliest linguistic differentiation at ca. 4500 BC? Can we go a bit earlier still? Or, if this process continued into the third millennium BC, do we look for these illusive Proto-Indo-Europeans ca. 2500 BC? It should be remembered that most archaeological cultures in Eurasia have "life-spans" on the order of 600 years, sometimes longer and sometimes shorter and if Proto-Indo-European is to be spread over three millennia, there is time enough for five cultural "life-spans" to select from or articulate into a meaningful answer. The range of time difference predicated by glottochronology is so large and imprecise then that it admits almost any of the current archaeological solutions to the homeland problem.

While I am on record as being highly sceptical of glottochronology (Mallory 1989a:276), I do recognize that it still has its supporters, and I much prefer to see academic salvos directed at what seems to be an intractable problem than each other (after all, this is Indo-European, not Celtic studies!). M. Swadesh (1960:345) proposed separation dates for many of the Indo-European "stocks," a task not helped by the fact that his linguistic evidence had to be itself taken from different time frames (Hittite was long extinct before Latin

was attested which was, of course, no longer living by the time Lithuanian texts first appeared). The challenge is clearly there for a present day supporter of the technique to provide in detail the dating of Indo-European separations and why anyone should accept them.

The third approach is what George Trager called hunch — “informed judgment in the light of linguistic structure and of known age of language separation elsewhere in the world” (Trager 1967:339). In the hands of linguists, this generally requires a rough triangulation from the time of the earliest historical appearance of the Indo-European languages in the second millennium BC, i.e. Anatolian, Mycenaean Greek, Indo-Aryan (and the presumed linguistic date of later Vedic Sanskrit and Avestan texts) back to the most plausible period of their separation from a common ancestor. On occasion, the basis for such an estimate is made explicit. For example, Tadeusz Milewski (1968:39), surveying the evidence for Indo-European dialects known at ca. 1500 BC, estimated that they stood in the same relationship with one another as do the Romance languages of the twentieth century with their ancestor, i.e. about fifteen hundred years of separation. Consequently, he estimated the divergence of Indo-European into its various stocks at about 3000 BC. Similarly, Warren Cowgill regarded the linguistic state at 1500 BC and suggested that the process required to explain the differences among Anatolian, Greek and Indo-Iranian should have taken at least one thousand years but probably not more than two thousand years, and he proposed a termination date for Proto-Indo-European of 3000 ± 500 years (Cowgill and Mayrhofer 1986:69-70). But as R. A. Crossland rightly observes, the variation in estimates of time separations between linguists “vary so much that no useful deductions can be made from them” (1972:47) and he explicitly rejects the use of the Romance languages to model the possible time frame of Indo-European divergence. Despite the obvious lack of procedural rigor (at least to any outsider), the “guesstimate” technique does tend to provide dates that generally fall within the range suggested by Ehret, i.e. ca. 5000-2500 BC (Mallory 1975:36-37).

Within this range, one perceives a decided break between those who follow a long chronology and those who accept a short one. For example, Wolfgang Meid has suggested that the Indo-European family be seen as undergoing three phases of development (a somewhat similar suggestion was proposed by Francisco Adrados 1982) wherein Early Indo-European might date from ca. 5000 BC after which Anatolian begins to diverge (Meid 1989:300). On the other hand,

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Norbert Oettinger (1987:192) has suggested that the divergence between Anatolian, widely presumed to be the "earliest" form of Indo-European, and the other Indo-European languages, should not be seen as a matter of millennia but rather "*eine Reihe von Jahrhunderten*" which would seem to pitch Proto-Indo-European into the third millennium BC. Similarly, Stefan Zimmer has argued what we may call the "strict constructualist" case. He argues that since a reconstructed proto-language is essentially an abstraction and there are no independent ways of dating it, the only date we can meaningfully employ is immediately before our earliest textual evidence about 2000 BC. He goes on to plead "I would like to make an appeal to linguists and archaeologists to abstain from using the term Indo-European or Proto-Indo-European for anything older than roughly 2500 BC" (Zimmer 1988:374, cf. also Olmsted 1993). He also writes that he is "gratified that Mallory...seems to favor the same date.... Is this the beginning of a new understanding between Indo-European Linguistics and Archaeology?" I'm afraid that Mallory is not quite so understanding.

Now I think that both linguists and archaeologists should realize the consequences of this "strict constructualist" date. By 2500 BC there is hardly an archaeological solution to Indo-European origins that does not propose that the Indo-Europeans spanned most of the breadth of Eurasia and other than Robert Drews' recent attempt (1988) to tie all of the Indo-Europeans to the beginnings of chariot warfare in the second millennium BC, I am unaware of any serious archaeological solution that envisages expansions beginning ca. 2500 BC or later. If one follows Marija Gimbutas' Kurgan theory, for example, then we would have Proto-Indo-Europeans occupying the entire area from the Corded Ware culture in Holland (Fig. 1) to the Afanasievo culture on the Yenisei or, following Colin Renfrew's association of the Indo-Europeans with the spread of agriculture we might have a still greater area (Neolithic Ireland to the Yenisei?) and the Sherratt's scenario would have them at least from Denmark to the Aral Sea (1988:591).

Can any linguist seriously envisage a single linguistic entity over such a large area? Sydney Lamb (1964) once wrote of a "maximum permissible area" for a language beyond which we must presume that the effects of space as well as time would fragment it. In my own book I employed a little empirical evidence to suggest something on the order of 250,000 to one million square kilometers as the absolute maximum for a language and that generally most languages occupied

territories of under 150,000 square kilometers. Generally, we seem to be operating with languages that occupy territories about the size of Germany or Poland. In terms of scale, this approximates the size of David Clarke's (1978) archaeological culture (3000 - 80,000 sq. km.) or the lower range of his culture group (80,000 - 1,800,000 sq. km.). In short, I suspect that almost any solution to the homeland problem proposed by most archaeologists would be linguistically implausible if one wishes to proceed from the purely linguistic dates urged on us by Zimmer.

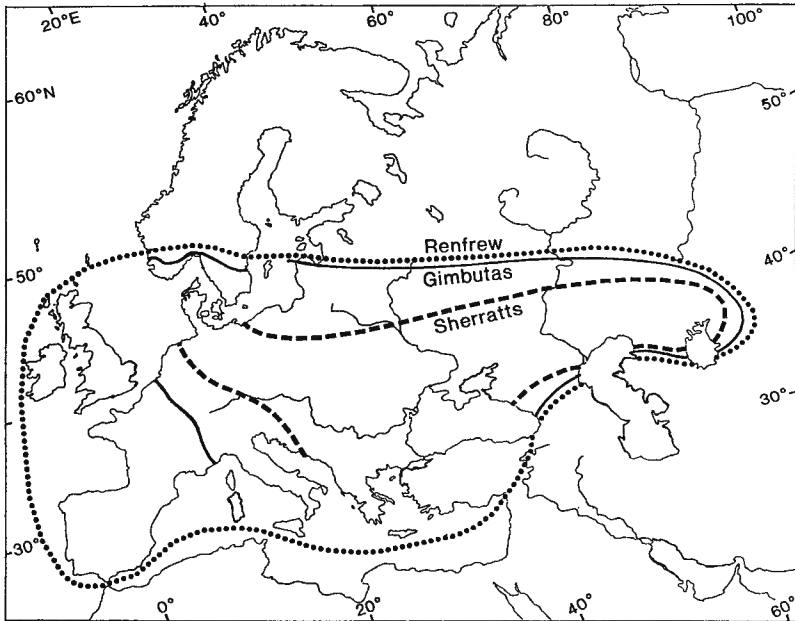


Fig. 1: Approximate distribution of Indo-European-speaking populations ca. 2500 BC according to the homeland solutions of Marija Gimbutas (1978), Colin Renfrew (1987) and Susan and Andrew Sherratt (1988).

The problem with Dolgopolsky's assertion is that linguistics as a science is unprepared to offer absolute dates for Proto-Indo-European although there is no difficulty whatsoever in finding individual linguists to propose such dates. They generally seem to fall in the period ca. 5000-2500 BC and, although Colin Renfrew may be correct

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in seeing some of these dates as circularly generated from accepting Gimbutas' solution to the homeland problem, many who do not accept her solution come to the same general conclusions and operate from what might be politely termed "informed estimation" or less politely "wild guess." But as Renfrew (1990:21) has rightly observed, the basis of these estimations is seldom made explicit.

The archaeologist can, of course, turn the tables and by offering a homeland solution — usually couched as the only viable homeland solution from an archaeological point of view — reverse disciplinary primacy and create his or her own chronology of Indo-European. When Colin Renfrew (1987), for example, dismisses much of the linguistic argument and immediately moves to what he considers as the only evidence in the archaeological record that might account for the spread of the Indo-Europeans, the inception and spread of farming in Europe, he in effect must date the initial divergence of Indo-European to the seventh millennium BC. Or, János Makkay, in regarding the Indo-Europeans as descended from three essentially exclusive cultural zones — the steppe, Danubian and Balkan areas — believes that the "archaeological evidence...clearly suggests that Proto-Indo-European began to diverge into dialect communities prior to the Early Neolithic" (Makkay 1990:60) which would take us at least to the seventh millennium BC if not earlier. In this, Makkay makes it at least explicit that if one assumes that the Neolithic cultures of central Europe and those of the steppe region represent mutually exclusive cultural zones, as seems to be suggested in a number of other works, e.g. Lothar Killian (1983) and Alexander Häusler (1985), etc., then the period of linguistic "unity" must be set to the Mesolithic. It is, I hope, obvious that only in a case such as Oceania, where the divergence of languages may be directly tied to the first occupation of various islands, can any archaeologist ever hope to presume that there are no other options and propose dates regardless of the linguistic evidence.

A final technique for providing the Proto-Indo-Europeans with some absolute time depth is lexico-cultural analysis, i.e. determining from the various Indo-European languages what lexemes or at least morphemes can be reliably attributed to their proto-language and when they may have first entered the realm of human experience. There is a purist or strict school in historical linguistics that regards all reconstruction as "achronic," i.e. has no relationship with real time but represents purely a relative ordering of phonetic or morphological features or rules. I think this is overstating the case. In actual fact

almost any reconstructed item of a proto-language has some chronological implications although generally they are so trivial that they are not worth considering, e.g. the lexical reconstruction of a deciduous tree such as the oak suggests that the Proto-Indo-European vocabulary was created after the middle Cretaceous period but then, no one is suggesting that a *Tyrannosaurus rex* spoke Proto-Indo-European. But if the reconstructed morphemes have meanings that are more temporally marked, the archaeologist can at least offer some indication as to when they may have come into existence. In order to pursue this matter more closely, I will set aside discussion of the obvious problem that the reconstruction of the proto-morphemes and their meaning is not always secure and that there is a wide range of views on the number of cognates, distribution of cognates, morphological shape, etc., required to demonstrate a reconstruction as Proto-Indo-European. Rather, I will focus the remaining part of this discussion on the types of reconstructions that are most often employed to suggest a late date for the differentiation of the Indo-Europeans — the terms for wheeled vehicles and the horse — and how they elucidate the entire problem of time depth.

As wheeled vehicles do not seem to appear anywhere in the world until the fourth millennium BC, their reconstruction to Proto-Indo-European seems to pose a very serious problem to accepting Indo-European dispersals as early as the seventh millennium BC since it supports those who claim that this model is “too early” (e.g. Anthony and Wailes 1989:442-443; Anthony 1991). The argument for the existence of the horse in Proto-Indo-European is a bit more complicated since while a term for horse is as reconstructible to Proto-Indo-European as any word in the Indo-European lexicon (Hamp 1989), it is not absolutely clear that it refers to the domestic rather than the wild horse and its temporal importance rests very much on the palaeozoological history of each region in Eurasia. For the purposes of further discussion, I will assume that both sets are reconstructible to Proto-Indo-European since I am employing them to illustrate a generic problem rather than prove a point about the location of the earliest Indo-Europeans.

If we presume for the sake of argument that the horse can be taken only as a generic description without regard to domestication, then the existence of it within the proto-lexicon of the Indo-Europeans would seem to suggest that the earliest Indo-Europeans were at least acquainted with it. Do we have evidence for the horse in areas such as

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Anatolia and Greece, areas crucial to those who associate the expansion of the Indo-European languages with the spread of early Neolithic farmers? We have faunal remains from this period and the proposition seems testable in a sense that most archaeologists would agree and I am not aware of a single horse bone recovered from an early Neolithic site in Greece or Anatolia. The evidence still suggests no horses known in Anatolia earlier than the fourth millennium BC and in so far as Greece is concerned, the earliest horse remains are from Early Bronze Age Macedonia and, more relevant to the Linear B tablets, the Middle Bronze Age (third millennium BC) in mainland Greece unless some equid bones from Early Bronze Age Tiryns and Lerna should prove to belong to horses (Dickinson 1994:49). The absence of horses in the regions occupied by the putative Proto-Anatolians and Proto-Greeks (and until the end of the Neolithic in much of the Balkans and Italy) would seem to be a very serious obstacle to the early Neolithic solution of the homeland problem. On the other hand, it is a bit less of an obstacle to Gamkrelidze and Ivanov's hypothesis for although they place the Indo-Europeans in the same region they do so at a later time when there is at least some evidence by the fourth millennium BC of horses in Anatolia and the Caucasus (Mallory 1989a:29, 273). Similarly the Sherratts' theory of somewhat later expansions could also accommodate the later horse remains in the Aegean and Robert Drew's theory of a still more recent eastern Anatolian origin has no problem whatsoever finding horses to fit his model.

It should be distressingly clear then that the ultimate utility of any reconstructed cultural vocabulary depends largely on the date proposed for linguistic divergence and, unfortunately for methodological rigor, determining the date of linguistic divergence seems to rely largely on the reconstructed cultural vocabulary. For example, if one accepts like Zimmer that the Proto-Indo-European linguistic continuum was not broken until 2500 BC, i.e. if linguistic borders between Indo-European languages only formed about 2500 BC or later, then items like the horse, silver, wool, wheeled vehicles, etc., i.e. all those items which many of us have argued indicate that the Indo-Europeans had already passed through Andrew Sherratt's so-called "Secondary Products Revolution," are of no use in determining the homeland of the Indo-Europeans since by then they could have spread from any point of origin through the whole continuum.

We can take another example. In a recent article David Anthony defends the notion that the Proto-Indo-European community must have

been relatively unified up to ca. 3300 BC because it shared a vocabulary for wheeled vehicles which only began to appear in Eurasia about this time. Against the suggestion that the words for vehicles may have spread among the various Indo-European languages later, Anthony argues that “the five Indo-European roots forming the wheeled-vehicle semantic field exhibit no internal evidence of having been derived from any one Indo-European daughter language” and had they come from an already differentiated language “then the linguistic signature of that parent group should be evident in the disseminated vocabulary” (Anthony 1991:200). This argument, of course, is at the crux of all attempts at providing lexico-cultural dates for Indo-European, and it forces us to confront the problem of the Indo-European “Dark Ages.”

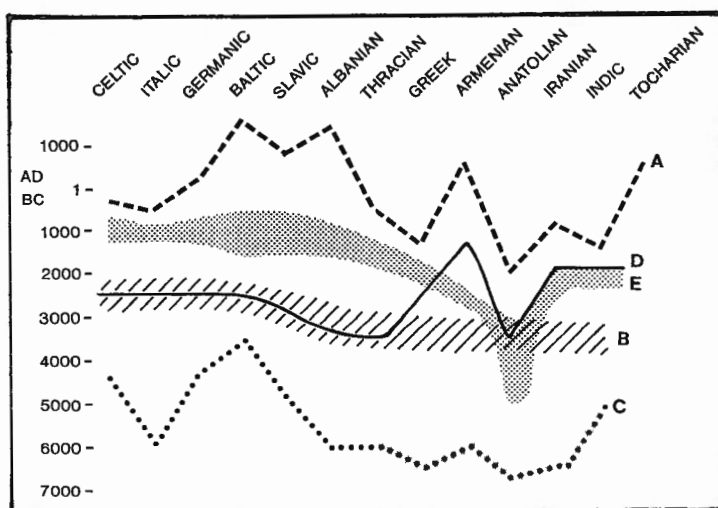


Fig. 2: Chronologies of Indo-European. A) approximate dates for earliest written record of various Indo-European stocks; B) approximate time frame by geographical region of “Secondary Products,” i.e. most recent cultural items of Proto-Indo-European lexicon; C) dates of the entry of (?Proto-)Indo-Europeans by geographical region according to the model of early Neolithic dispersals from Anatolia; D) dates of the entry of (?Proto-)Indo-Europeans by geographical region according to the model of Eneolithic dispersals from the Pontic-Caspian region; E) approximate dates for the “emergence” of the individual Indo-European stocks.

The Indo-European Dark Ages

The “Dark Ages” of the Indo-Europeans is that period between whatever date we assign to Proto-Indo-European and the earliest attestation of the individual Indo-European languages. In the nineteenth century, it was often imagined that each individual Indo-European “branch” marched out of the Proto-Indo-European homeland. Today, we generally dismiss proto-panzer divisions of Indo-European warriors and rather imagine an expansion of Late Indo-European over an increasingly large area in which the Indo-European “stocks” gradually diverged from one another. In order to examine this period, I will make use of a thought experiment in order to illustrate the problems and options of interpretation that we must confront. To examine the problem, we need to establish a model that is relevant to most of our discussion and which may be constructed out of the various chronological arguments that have been proposed so far.

Our evidence for the chronology of the Indo-European languages takes several forms. The most obvious and reliable are the earliest attestations of when each Indo-European language or stock enters the written record. These vary from ca. 1900 BC (Anatolian personal names) to as late as the fifteenth and sixteenth centuries AD (Albanian and Baltic) and provide the upper base line of our model (Fig. 2-A). The second series of dates are provided by lexico-cultural analysis, and they propose the existence of wheeled vehicles, silver and the full range of products of the so-called Secondary Products Revolution which appear reconstructible to Proto-Indo-European (Fig 2-B). Archaeological dates can be proposed for all of these, and while some of the so-called Secondary Products technology such as the plow or dairy products may be moved earlier, the most recent items such as wheeled vehicles still do not appear until the fourth millennium BC. This lexico-cultural baseline, of course, is only supposed to assist in providing *termini ante quem* for Indo-European linguistic divergence. In order to examine this model against various homeland solutions, I propose two different archaeological base-lines: one that subsumes the theory that the Indo-European languages spread with the dispersal of the Neolithic economy from southwest Asia (Fig. 2-C) and one that argues a later spread in conformity with a steppe or any other (later) Eneolithic homeland model (Fig. 2-D). In such a situation, for example, we might assume the presence of the linguistic ancestors of the Celts in west-central Europe by at least 4500 BC according to the

Neolithic proposal but not until at least the Corded Ware horizon, i.e. ca. 3000 BC, according to the steppe theory, etc.

All too often, I suspect, we have imagined that such a model indicated all the relevant information required to draw conclusions. For example, as the Neolithic base line in a number of areas seems to run 2000 years or more below the later lexico-cultural items, it would seem probable that such a model was simply too early. But too early in respect to what? As the linguistic argument is constructed, the lexico-cultural items need only spread before the existence of the daughter languages. There is one more chronological base line that we must apply to the model.

The date of the inception of each daughter language or branch is required in order to determine whether a word is circulating among Proto-Indo-European speakers or across already differentiated languages. The methods of achieving such a date are precisely the same as one would employ in dating the proto-language itself and in some respects would appear to be even more inconclusive than the former. To keep matters short we will only look at two techniques: informed estimation and lexico-cultural evidence since the other purely linguistic techniques are easily dismissed, and an archaeologist is hardly going to be able to determine whether people occupying a site in 1500 or 1000 BC had begun to raise their front vowels or devolve their stops.

With informed estimation we can find linguists who offer dates that are worth mentioning if only for the purpose of illustration. For example, Edgar Polomé notes that the current trend in Germanic linguistics is to date the first sound shift, i.e. the emergence of Proto-Germanic, to ca. 500 BC (Polomé 1987:219-220). In other words, we may refer to the Iron Age Jastorf culture as Germanic but we have no business using the word Germanic or Proto-Germanic for earlier periods (earlier than 500 BC) such as Montelius III or IV and although the inhabitants of this region (according to virtually all homeland solutions) may have spoken some form of Indo-European, it is not one that we have any name for. Proto-Celtic is normally assumed to have come into existence sometime between 1000 and 500 BC and linguists involved in discussing the emergence of Proto-Slavic (and one presumes Proto-Baltic) are unlikely to push the dates much earlier than 1500 BC (Birnbaum 1975; Klimas 1970; Mallory 1989a) at the very earliest (normally they would be dated to the first millennium BC like Germanic). As for the emergence of Greek from late Indo-European,

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John Chadwick (1975) was content to live with a date range of ca. 2100-1500 BC (with hot dispute within this range). The production of Indo-Aryan seems generally to be set to ca. 2000 BC. As we have already seen, the "separation" of Anatolian has been dated anywhere from the sixth to the third millennium BC.

These dates leave us with some sort of vague late Indo-European (Fig. 2-E), especially situated in those territories where we later find Germanic, Baltic, Slavic, Celtic and Italic. While we cannot link all of these together in the same way as we might Indo-Iranian as an Indo-European super-stock, there are some grounds for seeing broad morphological and lexical similarities in this region as recognized long ago by Antoine Meillet, who termed this his northwest Indo-European (cf. also Stang 1971). The striking thing here is that the northwest languages are generally seen to emerge as daughter branches sometime between 1500 and 500 BC (and Tocharian would perhaps offer a similar date), Greek and Indo-Aryan sometime between 2100-1500 BC. In a sense then the purely linguistic picture of Indo-European might be said to fit disturbingly well with Stefan Zimmer's proposal that Proto-Indo-European should not date prior to ca. 2500 BC.

Now there are a large number of isoglosses across northwest Europe but very few of them are of the solid lexical-cultural type that offer any hope of providing more precise dates. The potentially datable and archaeologically recoverable objects shared by Germanic, Baltic and Slavic are largely confined to gold [ON *gull*, Latv. *zēlts*, OCS *zlato*], silver [ON *silfr*, Lith. *sidābras*, Russ. *serebro*], rye [ON *rugr*, Lith. *rugys*, OCS *rŭžŭ*] (Porzig 1954:140-143), and vessel [Gmc. **fata*, Lith. *púodas* 'pot, vessel'] (Polomé 1990:333). It is presumed that these language groups had not yet differentiated when these words were borrowed from one community to the next in northern (and central) Europe (Stang 1971:67 - "*Wir behandeln solche Wörter, die sich lautgesetzlich von den ererbten gemeinindogermanischen Wörtern nicht unterscheiden,*" see also Klimas 1970:266). Silver, I suppose, could emerge as early as ca. 2500-2000 BC in the southernmost part of the northwest zone as it occasionally occurs in Bell Beaker burials. Otherwise, it seems largely an Iron Age phenomena and the disparity in reflexes between the northwest languages might well suggest an even later date for its spread. Gold, of course, is known earlier, at least since the beginnings of the Bronze Age, again about 2000 BC although much earlier if we consider central Europe in our area. Rye was probably transported northwards as a weed with wheat and barley and

might potentially have been known since the Neolithic (Zohary and Hopf 1988:69). By the Bronze Age, i.e. in the period ca. 1800-1500 BC, rye seeds are recovered from sites in Czechoslovakia and somewhat later in Poland and Denmark. A term for pot could have been shared from the terminal Mesolithic Ertebølle culture onwards. The addition of other northern terms (here we include Celtic and Italic (Huld 1990) such as oats (Lat. *avena*, Latv. *āuzas*, OCS *ovŭčl* but cf. also Khotanese *hau-* '(some form of non-barley) cereal'), bean (Lat. *faba*, ON *baun*, OPrus. *babo*, OCS *bobŭ*), plow (Lat. *plovum*, ON *plógr*, Lith. *plugas*, OCS *plugŭ*) would not change this pattern. Oats, again a possible weed in early barley and wheat crops, appears north of the Danube by the Bronze Age as also do broad beans (Knörzer 1991:193-94), while some form of ard at least is generally regarded as secure from the late Neolithic onwards. In short, the lexico-cultural evidence examined so far suggests that the northwest Indo-European group shared terms for a series of items that may have entered the region in the second millennium BC or earlier. On the other hand, by 500 BC we clearly have differentiated languages with loan words such as that for iron which was borrowed from Celtic into Germanic.

We must now return to our experiment and if one accepts the evidence so far, see what type of trap we have set ourselves. The opinions of many would seem to suggest that we need not require linguistic separation anywhere in Indo-European (with perhaps the exception of Anatolian) prior to 2500 BC and over a considerable area of Europe, perhaps no earlier than ca. 1500-1000 BC. In terms of our experiment, an item such as the wagon could have been invented almost anywhere at anytime and diffused throughout most of Europe up to the second or first millennium BC and still resisted detection as a loan word if marked linguistic borders had not yet formed across many of the languages from which we draw our evidence. If this is the case, we then may have to envisage a temporal definition of Proto-Indo-European that is tied to each language providing us with evidence for our proto-lexicon rather than imagining a discrete Proto-Indo-European period (cf. Schlerath 1982).

How do we evaluate our various archaeological proposals?

The Neolithic argument proposes that ca. 4500-4000 BC, populations in west and northern Europe spoke Indo-European and that it later evolved into Celtic and Germanic. These languages contain words for wheeled vehicles which are widely shared by other Indo-

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European groups. Archaeological evidence suggests that these words could not have entered their vocabulary at any time, no matter where they were situated, before the fourth millennium BC. According to many of the traditional arguments adduced for the date of linguistic divergence in this region, the terms for wheeled vehicles could have been adopted by either or both of these populations at anytime between ca. 3500 and 1000 BC and not be detected as a loan word. From this we can see that while the shared wheeled vehicle terminology cannot be explained as loan words between individual Indo-European languages, they also need not be explained as the fourth millennium BC terms either — they could have diffused later. In fact, the reconstructed vocabulary indicates not the environment of the Indo-Europeans on the “eve” of expansion but merely what terms were known to the Indo-Europeans before linguistic divergence became so great between communities that it permits us to detect loan words.

When do we stop the clock on Proto-Indo-European? As we can now see, the question is even more complicated than we imagined before. Obviously one might say that the clock must stop when we have our earliest evidence for already differentiated Indo-European, i.e. about 2000-1500 BC. But even that only indicates where and when a part of the Indo-European continuum had been transformed into a language that was demonstrably Anatolian or Mycenaean Greek or Indo-Aryan and not Proto-Indo-European. Because one or more of these languages had come into existence it does not mean that all other languages must also have differentiated as well and, indeed, if one accepts many of the inception dates of the Indo-European stocks suggested above, then historical linguists seem to be suggesting that largely undifferentiated Indo-European may have existed up until the first millennium BC in some areas. In short, late items of technology, plants or livestock could have circulated across a linguistic continuum after expansion had already begun. If linguists find such a conclusion absurd, then they must reconsider their own chronologies.

In evaluating archaeological solutions to the problem, the lexicocultural evidence does not rest so much with it being attributed to Proto-Indo-European, but rather that the Neolithic model places the linguistic ancestors of later Indo-European languages in their respective regions several thousand years before such terms could have been created. Is it linguistically plausible that putative Indo-Europeans in Greece and Italy, supposedly settled there 3000 years or more before the spread of wheeled vehicles or horses, would have developed on

such similar lines that they would accommodate loan words for wagons and horses according to the same phonetic rules as the rest of their inherited vocabulary? Is it plausible that different regions of Eurasia could have been speaking the same brand of Indo-European for thousands of years before they began to diverge? Or in western Europe where the time depth between occupation and diffusion of vehicles is less marked, the Neolithic argument appears to suggest that those people speaking “west-Linearbandkeramisch” and those speaking “Trichterbeckersprache” in the fifth and the fourth millennia BC were still speaking mutually intelligible languages about 3000 years later. Are linguists really willing to accept this phonetic parable of the master and the vineyard where lexemes are called to service over the course of millennia but all are rewarded with the same phonetic wages irrespective of when they began? This is what seems so implausible and why theories that attribute the Indo-Europeans to the Mesolithic or the original spread of the Neolithic seem “too early.”

But here we see that “too early” is largely based on the assumption that we can measure the rate at which languages change and the assumption that in 3000 years or more we must surely assume that linguistic divergence between previously related languages would be so strong that they must have split into different languages. Obviously if one prefers a later expansion of the Indo-Europeans, then the distance between Late Indo-European and the different linguistic stocks is much shorter, i.e. about 2000 years. It all depends on how fast one thinks languages changed in the Neolithic and Bronze Age and whether an archaeologist should trust any linguist who claims to know the answer. I find it much easier to believe that the Indo-European languages spread during the fourth millennium BC than in the seventh millennium, but I also understand why it may be so difficult to convince those who prefer an earlier date that they are wrong.

To end on a more positive note, I think we should take a much closer look at our Dark Age lexicon and here, perhaps, archaeologists might take the lead in suggesting datable markers that provide linguists suitable lexical targets to examine. Any archaeologist can generate a list of items with approximate *termini* that might be of use to historical linguists attempting to assess the stages of Indo-European evolution between Proto-Indo-European and the emergence of its various daughter languages, especially between ca. 2500 and 500 BC. For example, linguistic analysis associated with Bronze Age inventions such as daggers, rapiers, swords, tin, lead, spoked wheeled vehicles,

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helmets, shields, razors, etc. — all items that have identifiable archaeological horizons and in some cases traceable origins and dispersions — might provide us with not only better temporal control of our lexico-cultural data but also help elucidate the linguistic relationships of the Indo-European Dark Ages.

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The Indo-European Question in a Norwegian perspective: a View from the Wrong End of the Stick?

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Only a few Norwegian archaeologists have published anything concerning the spread of Indo-European culture — among them Gutorm Gjessing (1945), Sverre Marstrander (1953 and 1957), Erik Hinsch (1956), the Hålands (Håland and Håland 1982); Håland (1987), Ø. Johansen (1989) and, most recently, Christopher Prescott (1993). Mention should also be made of Knut Odner, who gives some consideration to these problems, being nevertheless mostly concerned with Saami, that is, Lappish or Finno-Ugric matters (1987). However, it is probably right to say that most of these works have the character of brief comments and short surveys. This is in some opposition to the quite important contributions to the study of Indo-European language made at longer or shorter intervals by Norwegian linguists such as Knudtzon (1915), Morgenstierne (1929-1956), C. J. S. Marstrander (1915) and Borgstrøm (1940 and 1941), see also Sommerfelt (1958). But before we look briefly into some possible reasons for this state of affairs, let me say that the purpose of this paper is not to offer any new and surprising insights into the history of Indo-European culture in Norway and beyond, but rather to try to point at some roads that might be followed to achieve some insight. I do this in the belief that the history of how Indo-European culture came to Scandinavia and its subsequent fate there is an important and interesting field of study, both to Scandinavians and in a general sense. That this needs stating at all may be surprising to some — however, not many years ago the mere mentioning of Indo-European culture in a standard world history by two Norwegian authors (Håland and Håland 1982) was deleted and the relevant chapter totally rewritten for the Swedish translation of the work (Burenhult 1983).

There may in fact be several reasons for the apparent lack of interest in the broader cultural aspects of Indo-European studies, not only in Norway, but indeed in Scandinavia as a whole. One such reason may be that although Germanic culture is important to the study

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of Indo-European culture in general, most of the literary sources are rather late when compared to those from some other parts of the Indo-European world. There is, however, of course the special case of Gothic. Also, some runic inscriptions have been dated as early as approximately 200 AD, and more or less ambiguous descriptions of Germanic conditions exist in works by classical authors such as Caesar and Tacitus, but the bulk of literary sources for Germanic culture is otherwise mostly less than 1500 years old, while Scandinavian sources have yet barely reached the age of one thousand years.

Another factor that may have played a part, even if possibly on a more or less subconscious level, is the fact that Norway and Scandinavia are situated on the geographical periphery of the pre-modern, that is, pre-discoveries distribution of Indo-European culture, and so may be perceived to be of a similarly peripheral importance to the understanding of the origins of Indo-European language and culture.

A peripheral position in the Indo-European world is, however, something that Norway shares with many other regions, including the rest of Scandinavia as well as the British Isles, the Iberian peninsula, Italy, Greece, Turkey and even India, to mention a few. Could these and other Indo-European cultures also share other characteristics connected with their peripheral position, and could this illuminate the study of Indo-European culture in any way better or at least differently from that provided by the more central or older Indo-European cultures? The expansion, after all, takes place at the periphery at any given time, rather than at the center. This periphery, or border, obviously is where Indo-European culture meets and confronts other cultures.

One feature that is met with in virtually all areas peripheral to the distribution of Indo-European culture is the historically attested presence also of non-Indo-European languages, such as Saami in Norway, Pictish in Britain, Basque on the Iberian peninsula, Etruscan in Italy, Pelasgian in Greece and a host of different languages in India and elsewhere in Asia, to mention only a few. Many such languages have at various times been assumed to represent remnants of pre-Indo-European cultures in their respective regions (one exception would be Turkish in Anatolia). In Norway, this has spurred a debate on the relationship between the Germanic and Saami populations, cultures and histories. This debate has been going on for almost as long as there have been linguists, archaeologists and historians at work in the

country and certainly has not shown any sign of slowing down in recent years. And, I think, typically the debate has also often had, and indeed still has, quite audible political and generally value-laden overtones. Perhaps this can be seen as a case of the ongoing confrontation between Indo-European and non-Indo-European cultures.

If so, the questions pertaining to the Indo-European theme in Norway may not be of so peripheral, provincial or otherwise minor importance after all but represent general tendencies which will be recognized by many. We shall return to this in a while, but let us first throw some initial glances at what is offered to the student of early Indo-European culture in Norway, beginning with a brief comment to the situation within Scandinavian research.

Considering principles first, there can of course be no quarrel over the Indo-European nature of the historically attested Scandinavian languages and the aspects of culture more or less related to this. There has, however, been some reluctance on the part of archaeologists to accept that the genesis of this can be considered in a meaningful way from an archaeological point of view (so already Müller 1913). This debate has received several further contributions from Scandinavian archaeologists, most of them remaining skeptical concerning the derivation of Scandinavian archaeological cultures (particularly the Single Grave and Battle-Axe cultures) from Continental ones as well as of the fruitfulness of trying to combine linguistic and archaeological theories and observations at all (so Åberg 1935 and elsewhere; Malmer 1962; more recently, Bågenholm 1992 and in press; Damm 1993).

Generally speaking, there seems to be little reason, in the absence of any specific evidence to the contrary, to ascribe the introduction of Indo-European (but perhaps not yet Germanic) culture to Norway and indeed to Scandinavia to any other archaeological period than that represented by the Neolithic cultures. The Corded Ware culture remains the prime candidate, in the shape of the Single Grave culture and the Battle-Axe culture, and rooted in the secondary, European homeland of the Globular Amphora horizon in Marija Gimbutas's attractive hypothesis (Gimbutas 1992). It is almost generally accepted that it was the earlier Funnel Beaker culture and the Corded Ware cultures that introduced agriculture to Scandinavia, certainly including southern Norway (Figs. 1-3). This may have been followed by a period when agriculture was replaced by an intensified exploitation of the abundant hunting and fishing resources of the Norwegian coast by a local, sub-Neolithic culture earlier placed under

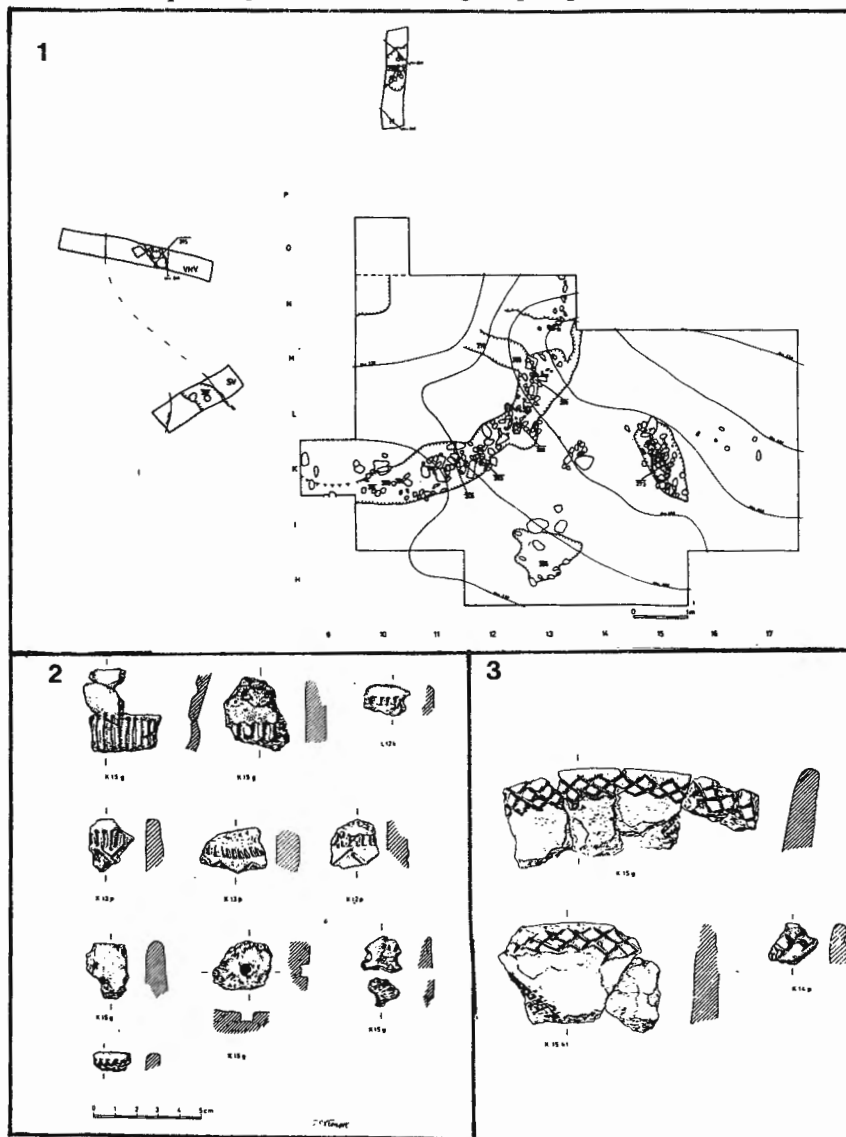


Fig. 1: Finds belonging to the earliest Neolithic culture in Norway. 1) The site of a dolmen at Skjeltorp, Østfold, southeast Norway. 2), 3) typical TRB pottery (compiled from Østmo 1982:figs. 2, 8 and 9).

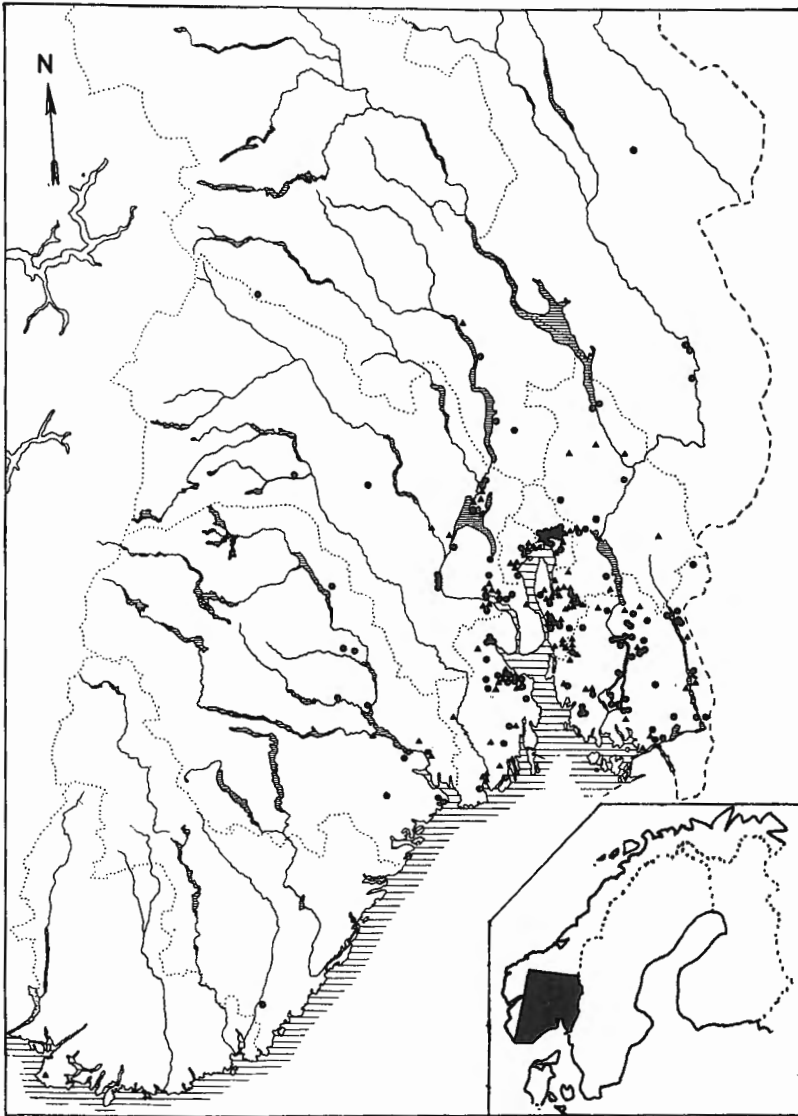


Fig. 2: Map of finds of typical TRB axes in southeast Norway, showing the geographical distribution of the Norwegian TRB (from Mikkelsen and Høeg 1979:35, fig. 1, slightly modified).

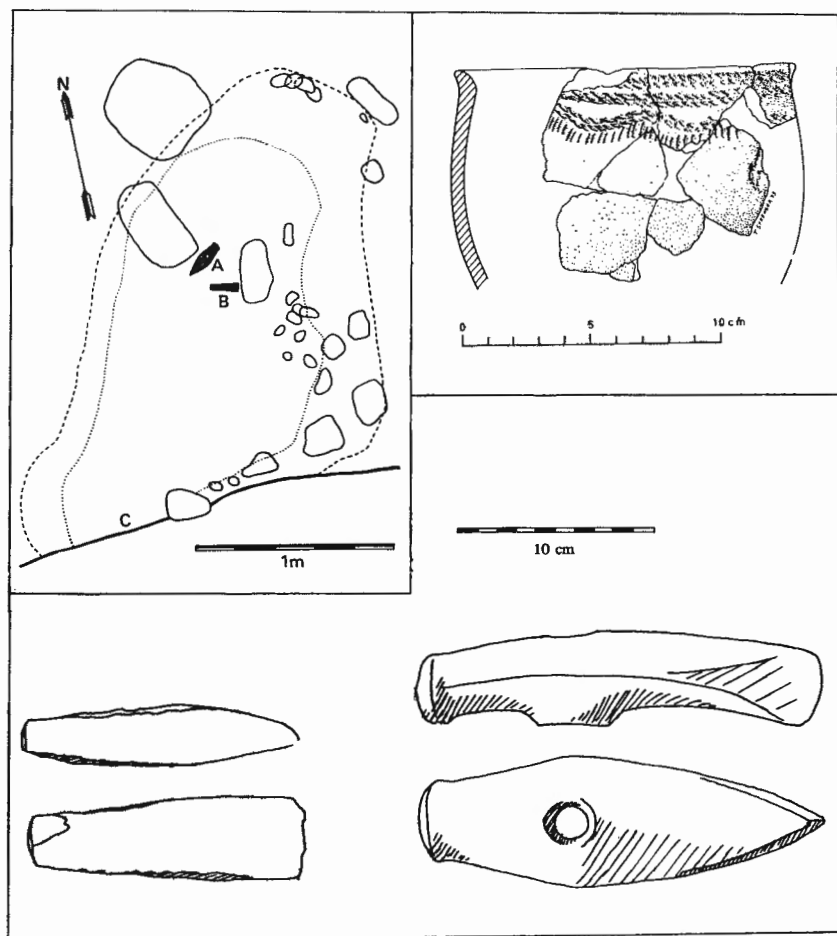


Fig. 3: Grave finds from the Battle-Axe culture in southeast Norway, from Kasin, Telemark. Plan of grave (upper left), decorated pot (upper right), thick-butted flint axe (lower left), battle-axe (lower right) (adapted from Mikkelsen 1974:figs. 3-6).

the general heading of the Pitted Ware culture, but better described on its own as the Whipped Cord culture (Østmo 1986, 1990 and 1993). The Funnel Beaker culture had settled only on the favorable soils in the southeast, on both sides of the Oslo fjord. Agriculture was reintroduced at the time of the Battle-Axe culture, a local variety of the widespread Corded Ware cultures, which appears to have spread agriculture around most of the Norwegian coast as far as substantially north of the Polar Circle (Johansen 1979) (Fig. 4), and in the remarkably short time of quite likely less than a couple of centuries (see also Nærøy 1993). This is worth noting, perhaps, as it takes the Corded Ware culture much further afield than most published maps of its overall distribution.

Even if one accepts that migrations may have played at least some part in this expansion, the course of events leading to the Indo-Europeanization of most of Scandinavia is very far from clear, and may well have been quite complicated. Interestingly, throughout the greater part of Norway the introduction of Indo-European culture would

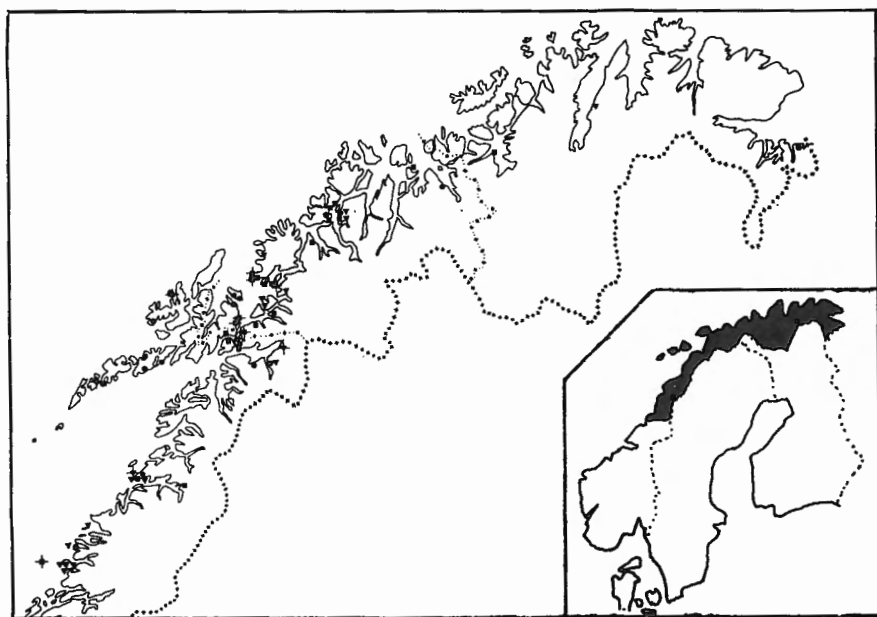


Fig. 4: Map showing finds from the Corded Ware (Battle-Axe) culture in north Norway (from Johansen 1979:25, fig. 1).

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appear to have coincided with the introduction of agriculture, as noted by Prescott (1993).

Later archaeological cultures comprise the late Neolithic and the Scandinavian Bronze Age and early Iron Age cultures and the expansion and consolidation of agriculture to and in many Norwegian regions. There does not, however, seem to be much in those periods to encourage theories about large-scale immigrations to Norway, the material and style of one period leading more or less seamlessly to the next all the way. The events of the Neolithic thus apparently remain the latest possibility for an introduction of new cultural concepts on a sufficiently wide scale to account for the introduction of Indo-European culture. Perhaps they can only be compared to the introduction of Christianity more than three thousand years later for the size of their impact — and in the event favorably. Had Latin subsequently ousted Norse, the verdict might have been different. This did not happen, of course. Norway, however, at roughly the same time became a secondary (or tertiary or quaternary) center for the wider dissemination of Indo-European culture, a homeland in its own right, the basis for expansion to much of the North Atlantic as far as Greenland and Newfoundland (Ingstad 1985), if not permanently, but permanently to other places such as Iceland and the Faeroes.

There exists a body of archaeological evidence that would appear to offer some quite interesting possibilities for insight into early Indo-European culture in Scandinavia, that is, the rock carvings, as mentioned briefly also by Prescott (1993:14). Thousands of these can be found in most of Scandinavia, and by general consent they were produced as expressions of strong concerns, whether as most often maintained of a religious nature or also with other connotations.

Pictorial rock carvings were produced in Scandinavia in two or three chronologically different cultural contexts. The two earliest of these belong in the Mesolithic period (see Hesjedal 1994), and may safely be left aside in our context. The third body of pictures has been dated to the Bronze Age, continuing into the early Iron Age, and here, quite clearly we are in different, but, in our present context, familiar territory. The motifs on these pictures comprise ships, chariots and other vehicles (Fig. 5), weapons such as swords and axes and people. These are mostly men — warriors, ploughmen, hunters, acrobats and trumpet players, invariably in a state of sexual excitement. Women are also present, but more rarely, and they are not involved in an equally large number of activities. These pictures are found in great numbers

in south Norway north to the Trondheim district, i.e. Trøndelag, as well as in south and middle Sweden, Denmark and the northernmost part of Germany.

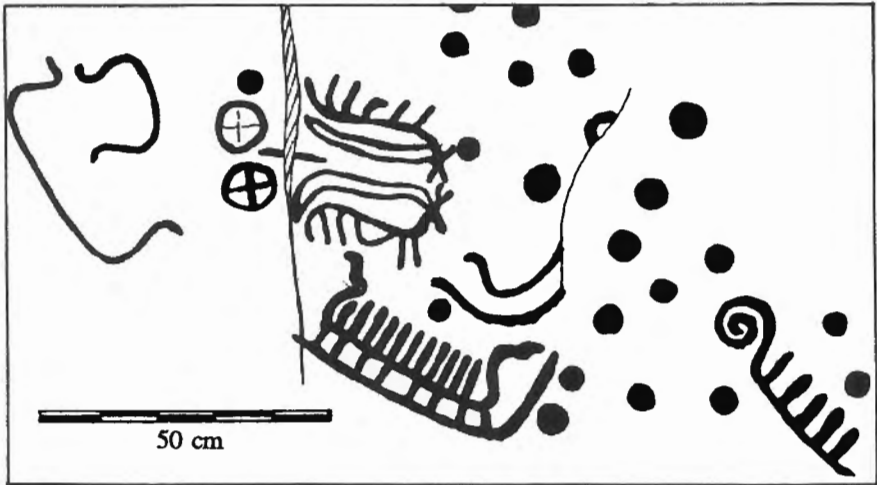


Fig. 5: Detail of Bronze Age rock carving at Haga, Østfold, southeast Norway, showing two-wheeled chariot pulled by horses, in addition to ship designs and cupmarks (adapted from Marstrander 1963: pl. 16).

At least since the 1920's it has been claimed that such rock carvings are vestiges of a fertility religion which existed in Scandinavia during the Bronze Age. Sometimes, some of the more prominent human figures have been thought to represent deities, but more commonly the religion has been assumed to have been concerned with worship of the sun and other life-giving powers of Nature. More recently, other lines of interpretation have been brought to attention. Pictures such as the thousands of ships, circular figures probably representing wheels, weaponry and pieces of garments may have acquired a symbolic value because of the importance of such items in the business of running society and the maintenance of power. The symbolic value acquired by ships, as a superior means of communication for both peaceful and warlike purposes is especially striking in such light. The real source of power certainly lay in the

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ability to control men, and not in any reference to divine authority, although "power" in the Bronze Age perhaps always meant or was tied to religious power.

The connections between rock carvings and other European cultural manifestations play a large part in the works by Oscar Almgren and Sverre Marstrander (Almgren 1934; Marstrander 1963), but others have favored more exotic comparisons, attempts having been made to explain them even with reference to the distant world of the Ugaritic creation myth (Jørgensen 1977 and 1987). Caution obviously is in order, but so, it would seem, is a renewed assessment of the iconography of this remarkable collection of images. Features such as the favoring of the warrior and male leadership, as well as pictures of horse-drawn chariots certainly contribute toward a general impression that the society they depict, must have looked quite like what one might assume for early Indo-Europeans. Also, they represent a continuous tradition of pictorial expression extending well into the Iron Age, when Northern societies were of course without any doubt Indo-European, and back at least to the beginning of the Bronze Age, thus, bringing Indo-Europeanism in Scandinavia in a spiritual sense back to somewhere in the first half of the second millennium BC, independently from any linguistic or literary considerations.

The possibilities for studying the Indo-Europeanization of Scandinavia and Norway from the point of view of language have been rather little exploited, it is probably right to say. Generally, linguists are inclined to consider the Bronze Age as the most likely time for the Proto-Germanic language, with nothing to prevent the development from Proto-Indo-European to have taken at least as long as since the middle Neolithic, approximately 2500 BC (personal communication from Dr. Ottar Grønvik, others may accept this possibility, while preferring a later date). The study of loanwords of Indo-European, Germanic, Proto-Norse or Old Norse origin in Finnish has provided arguments for dating the early phases of the developing Germanic language to the Bronze Age or earlier (see Koivolehto 1981 and 1983), although to an outsider there appears to be little agreement between scholars in this hotly debated field. It might be possible, perhaps, to gain more than has been achieved so far from place-name studies, but there does not appear to be much activity in onomastic circles directed toward such goals at present, possibly on account of the seemingly unsurmountable uncertainties and assorted other difficulties involved in any such undertaking. There remain the findings of Krahe concerning

river names (e.g. Krahe 1964); these apparently are viewed as somewhat uncertain, if with respect, by Norwegian scholars in this field. There exists in Norway also a group of some few obviously very old place-names which have never been satisfactorily explained, and which have by some been considered as possibly pre-Indo-European (Bakka og Møllerop 1963; Myhre 1981 and 1984). The best known of these probably is the Stavanger airport Sola, actually an ancient name of a low hill, and then of a group of farms (Fig. 6).

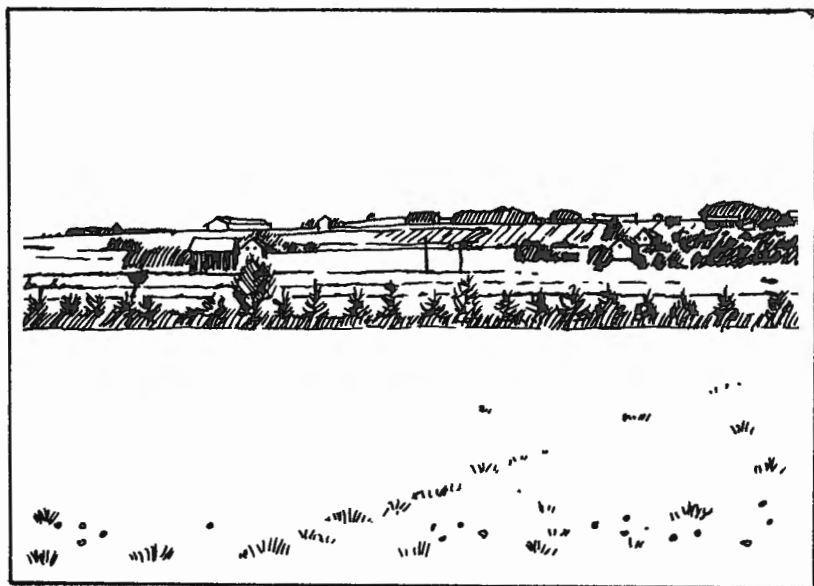


Fig. 6: The low hill originally named Sola, one of a number of ancient and possibly pre-Indo-European place-names in Rogaland, southwest Norway (from a photo kindly supplied by Arkeologisk museum i Stavanger).

Whether it might be possible to transcend the level of pure speculation as to the origin of these names, I could not say, but it would be interesting to see an attempt. More might still result from a historically informed study of the oldest strata of demonstrably Indo-European place-names, of which there are many. Especially there are many such ancient names along the Norwegian coast: names of islands, fjords and other waterways, but also of landscapes and lakes. Such names would seem to tie early Germanic language to most of Norway

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at least up to Troms, far north of the Arctic Circle. This might indeed be claimed to represent a problem, because the geographical area occupied by Proto-Germanic speakers would seem to be much too large — from the Rhine to Arctic Norway, and from Finland to the English Channel, covering close to 150,000 square kilometers. This is at least three times that suggested by Mallory as reasonable for a major Bronze Age language (Mallory 1989:64 and 145), and notwithstanding the wide margins of uncertainty needed for any computations of this kind, it seems decidedly too big. There is, however, one very important condition to remember. The part of Europe occupied by Germanic speakers is bound together, not separated, by several substantial waterways — the Baltic, the Danish Belts, the Kattegat and Skagerrak, the North Sea and the long Norwegian coast, which was important enough to provide the country with its name — and still we have not mentioned the large navigable rivers running through the North European plain. The importance of ships to the culture of Germanic peoples in historic times is so obvious as to hardly need mentioning, and it was no less important in the Bronze and early Iron Ages, as the rock carvings make so abundantly clear (Fig. 7). Sea traffic, then, provided this area with means of fast communication of a totally different order from what was available in more continental surroundings, especially when the ships in question were of the

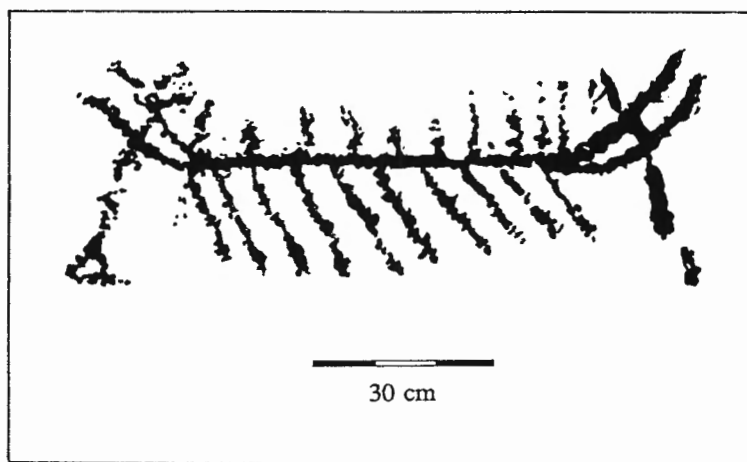


Fig. 7: Rock carving of an early Iron Age rowing vessel at Dalbo, Akershus, southeast Norway.

superior construction of, say, the Danish Hjortspring ship of ca. 300 BC (Kaul 1988). In this way, cultural unity could be maintained over a much larger area than what was possible with land transportation only. As much as anything, it was the need of the chieftains and petty lords to take part in a wide-spread network of alliances and mutual friendship giving access to honor, bronze, gold and other precious goods that maintained Germanic unity over most of northwest Europe for so long.

That this cultural unity was somehow connected with the sea, is indeed brought into relief by the dominance of un-Indo-European Saami place-names away from the sea in the interior of the Scandinavian peninsula, especially in the middle and northern parts. They may not actually represent a pre-Indo-European substrate in the true sense, but their presence now brings us back to the continued confrontation in Norway between Indo-European and other cultures.

The relationship between adjacent Norwegian and Saami populations and cultures can be traced back as far as the literary sources will allow. Perhaps typically, the subject becomes overwhelmingly nebulous almost the second one tries to extend the search into prehistoric times. Some maintain that Saami identity can be followed as far back as to the early Mesolithic or, by some accounts, late Palaeolithic Komsa culture of Finnmark in Arctic Norway, while others refuse to have anything to do with the concept earlier than the Iron Age or even later.

However this may be, the history of Saami-Norwegian relations contains elements that must have characterized the relationship between Indo-Europeans and others time and again during the course of Indo-European history. Here we can only mention some of these conditions in passing — the dominance in recent times of Norwegian over Saami culture, economically, politically, religiously and otherwise. More interesting, perhaps, is the probability that these conditions replaced a situation dominated by a greater balance between the two cultures, with exchange of objects and ideas between the two populations, including many linguistic elements that may help the dating of as well as the understanding of the nature of the contacts through time. And it involves the possibility that the very contact between Norwegian and Saami cultures may have influenced the character of both. Indeed, it has been suggested that Saami identity as we know it arose in response to the influence from the larger and dominant Germanic and Finnish cultures (see Odner 1985 with refs.).

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Similar situations may have occurred many times between Indo-Europeans and their neighbors. If, as seemed likely not so long ago, the Saami population would eventually assume a Norwegian, i.e. Indo-European cultural identity, more or less shaped by their own cultural background, this would certainly not have been the first such case in Indo-European history. A thorough study of the relationship between the Saami and Norwegian cultures, indeed of similar, recent or modern conditions everywhere, may therefore be of help to the understanding of this type of spread of Indo-European culture also in earlier times. There may be a place in Indo-European studies for some form of ethno-archaeology as advocated by Ian Hodder and others (Hodder 1982).

In the Stone Age, and certainly when the Battle-Axe culture appeared in the middle Neolithic, the hunting and gathering culture of the Norwegian coast and mountain areas was highly developed and prosperous, living in one of the most fertile hunting grounds anywhere. The meeting between these two worlds must have been a spirited one, although the details of those encounters elude us now. It is here that there may be something to learn from the observations of similar relationships in more recent times, such as those involving the Saami and the Germanic Norwegians. While this particular relationship may not reach as far back as to the middle Neolithic, it is a prime example of something that has run through the course of Norwegian history for the last six thousand years, being rooted in the nature of the land itself. This certainly is more diversified than in most European countries, indeed than in most other places in general. In short, few countries have both apricots and reindeer. This ecological variety certainly at all times has provided a wide selection of opportunities for people, and cultures, of quite differing descriptions.

It was one of the main ideas of that great founding figure of Norwegian archaeology, A. W. Brøgger, that many elements of historically attested Norwegian culture could best be explained with reference to the preservation of cultural practices indigenous to the country and of a very great age, especially those connected with the continued exploitation of hunting and fishing resources (Brøgger 1926). In this sense, the encounter between non-Indo-European and Indo-European cultures and the spread of the latter is an ongoing, and by all accounts continuous process in Norway.

Acknowledgements

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The Narva Culture and the Origin of the Baltic Culture

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In the analysis of the formation of the Baltic culture, its beginning is traditionally connected with the spread of the Corded Ware culture in the east Baltic region. Specialists of ethnic history indicate that the incoming people were not yet Balts, but Indo-Europeans, who, having joined with native peoples in these lands, predetermined the process of the formation of the Balts.

According to the classical thesis of the Indo-European theory, in the second to third millennia BC, the people of the Corded Ware culture are considered the ancestors of the Balts and came to the east Baltic area from the south and southwest, having amalgamated with the local people after having overpowered them. This is a simplified explanation of the origin of the Baltic culture in the east Baltic area (Rimantienė 1992; Butrimas and Česnys 1990).

However, the latest data derived from archaeological research tell us otherwise (Girininkas 1994; Miklyaev, Mazurkiewitch and Zajcewa 1994). Research into the Kunda and Narva cultures in the territories of Lithuania, Latvia, Estonia, north Byelorussia and the southern Pskov district show that the Balts are locals — the inhabitants of the post-glacial epoch with a very distinctive and peculiar culture retained from the end of the Mesolithic up to the late Bronze Age and later on.

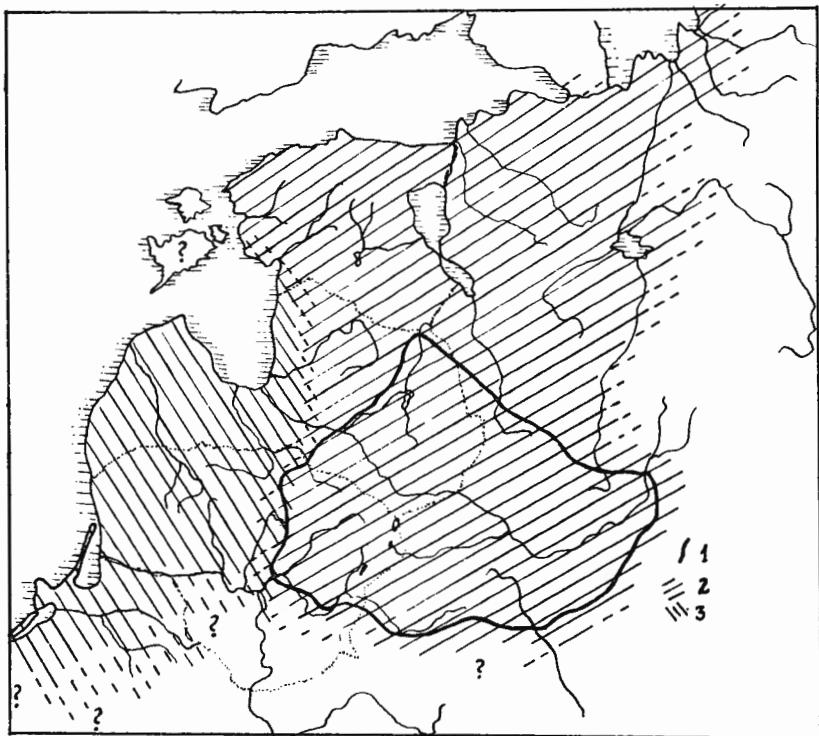
Archaeological investigations speak for the fact that in the fifth to second millennia BC there existed a layer of a very distinct and original culture in the east Baltic area, the so-called Narva culture, the roots of which reach back to the Mesolithic Kunda culture and which was the main culture of the east Baltic area (see Map 1) during the whole Neolithic and early Bronze Age (Girininkas 1989). The main features of this culture are observed even in the Stroked Ware culture. This phenomenon, not investigated more thoroughly until now, forms the basis of the Baltic culture.

After a detailed analysis of various types of artifacts found in monuments of the Mesolithic and early Neolithic in the east Baltic, we

have come to the conclusion that the local Mesolithic Kunda culture played the main role in the formation of the Narva culture (Girininkas 1994).

The use of ceramics within the territory of the Narva culture was a technological innovation which was common to all European cultures and was accepted by the people of the Narva culture as a natural industrial novelty that could improve conditions of life.

Material analysis of the sites and radiocarbon dating show that the development of the Narva culture was simultaneous with other archaeological cultures of the northeastern and south Baltic forest zone: the upper reaches of the Volga, the Ertebølle, the Desna, the Neolithic Nemunas and others (Loze 1988; Jaanits 1959; Girininkas 1990;



Map 1: The Territory of the Narva culture

LEGEND: 1) Territory of the late Narva culture in the early Bronze Age.

2) The northeastern territory of the Narva culture in the middle Neolithic.

3) The southwestern territory of the Narva culture in the middle Neolithic.

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Timofeev 1991; Vankina 1970; Miklyaev 1971; Chernyavskii 1969; Rimantienė 1979; Butrimas 1982; Gurina 1967; Zagorskis 1973).

Many of the sites of the Narva culture have been investigated in the northern and eastern Narva culture territories. The first and earliest Narva culture sites (Uosa, Narva I, Narva III and Akais) were detected here. Therefore, at the end of the 1970's, the opinion that this culture had existed only in the early Neolithic arose. The first to point out the existence of the Narva culture in the middle Neolithic was F. Zagorskis, who explored the Piestinia settlement (Zagorskis 1965).

The possible existence of the Narva culture in the late Neolithic was not discussed for a long time. Instead, four independent cultures were delineated in the northeastern territory of the Narva culture. These are the Corded Ware (Rimantienė 1984; Loze 1979), the Usviaty (Miklyaev 1969), the northern Byelorussia (Chernyavskii 1967) and the late Spangly Pottery (Loze 1979) cultures. The three latter cultures, according to the authors, were based on the Narva culture, but these independent cultures were distinguished without taking into account the development of the Narva culture and the impact of the neighboring cultures on it. Keeping with tradition and without thorough study of the material from excavated sites, the authors claimed that the above mentioned cultures were based on the Corded Ware culture. However, as is known, one or more levels in sites ascribed to the Corded Ware culture is a rarity in the northeastern territory of the Narva culture. Material that could be ascribed to the Corded Ware culture is also scarce in Narva settlements. Therefore, the authors' agreement with the thesis that the Corded Ware culture had a great impact on the above mentioned cultures is doubtful.

So far existence of the Narva culture in the early Bronze Age is traced only in the northeastern area of the Narva culture. These sites are Abuora I, Asne I and Lagaža in eastern Latvia, Udviaty-Uzmen in the southern area of the Pskov district and Kretuonas Ic and other settlements in eastern Lithuania (Girininkas 1994).

The late Narva culture had a great influence on the formation of the Stroked Ware and the Dnieper-Dauguva cultures of the later Baltic (Girininkas 1990).

In the southwestern territory of the Narva culture during the late Neolithic, the Baltic Coastal (Pamarių) culture was developing at the merging point of two Indo-European cultures — northern and southern.

People of the Corded Ware culture, having come to what was for

them a strange, natural environment, simply were unable to change the stereotypes of the household and spiritual life characteristic of the inhabitants of the Narva culture. The new-comers who came to the southwestern areas culture did not create a new ethnos because the local people were not ousted completely or assimilated. The phase of the existence of the newcomers' culture was too short; moreover, they were not dominant either in economic-social or in spiritual life. There is no possibility of tracing the succession of Baltic Coastal and western Baltic Burial Mound cultures, Baltic Coastal and Stroked Wares cultures in the southwestern territory of the Narva culture. To assert this view, a thorough archaeological typologization is indispensable. Newly investigated sites are missing, for example, settlements of the western Baltic Burial Mound culture are not known. That is why it is still impossible to relate the Baltic Coastal culture with the formation of the Baltic culture.

There was not a single new archaeological culture in the territory of the Narva culture which could have changed the Narva culture since the early Neolithic. The Narva culture was affected by the Pit Comb culture, which appeared in the eastern Baltic area at the end of the first quarter of the third millennium BC and which influenced the northeastern territory (eastern Balts) of the Narva culture.

At the same time, the southwestern territory of the Narva culture (western Balts) was affected by the Funnel Beaker, Globular Amphora and later by the Corded Ware cultures. The period of the late Narva culture is very significant for the development of the Baltic culture. Since the middle Neolithic, two variants of the Narva culture, differing in the influence made by the neighboring cultures, have come to light. From this time, the process of formation of eastern and western Baltic cultures evidently began.

Archaeological material shows that material and spiritual culture was changing alongside changes in the economy. The more significant changes of the material and spiritual culture and the change of inhabitants in the northeastern territory of the Narva culture are not observed. Only the Baltic Coastal culture, which formed in the late Neolithic period in the southwestern area at the meeting point of the Narva culture under the influence of the Baltic Corded Ware culture, had many common features with the Narva culture, not only in the material but also in the economic and spiritual spheres. Continuity in the material culture of the northeastern area of the Narva culture up to the late Bronze Age and, apparently, even later times renders the

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Corded Ware culture's taking root in the territory of the eastern Balts in doubt.

Inhabitants of the Narva culture, who lived in the above mentioned territory, were the same Indo-Europeans (Northerners) as people of the Corded Ware culture (Southerners). Perhaps the difference between the southern and northern Indo-Europeans was as large as it was when people of the Narva culture and their ancestors, who, during the post-glacial epoch, could move away from southern people and adapt to living in a natural environment different than that of the southern peoples.

There could be no distinct linguistic difference between them, so it would be better to reject the traditional and long-held opinion that the Baltic culture began forming at the end of the third millennium BC to the beginning of the second millennium BC. The sources of the Baltic culture reach back to Mesolithic times.

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The Pan-European Corded Ware Horizon (A-Horizon) and the Pamarių (Baltic Coastal) Culture

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If we mark a map of Eurasia with all of the regions where the primary homeland of the Indo-Europeans and the creators of the Corded Ware culture have been looked for, a motley picture would emerge. This would be true, especially if we put those elements on the map which were considered to be diagnostic of the culture. They would look very different and would not reflect the essence of the culture. Regardless of what element was pointed out, all of them constitute the entity of the Corded Ware culture. Nevertheless, the mechanism of formation of every culture remains a "black box": we know the initial elements and their outcome, but the sum of inner processes is unknown. However, in the multitude of discussions, investigations and controversies, the idea arose that it is necessary to find the point when the mixture of various elements left the "black box" as the Corded Ware culture and what peculiarities it had. Glob (1944) proposed a well-known theory that the Corded Ware culture began at a time when the so-called A-horizon (i.e. the presence of diagnostic features such as A-axes, A-cups, A-amphorae and raised decorated pots) appeared throughout the entire area.

This horizon has been defined according to the above-mentioned grave finds. However, all of the articles in a collection of this type can never be found in a single grave; therefore, it is necessary to reconstruct the horizon from different archaeological monuments. Struve (1955) broadened the examinations of this sort, looking especially for the inheritance of the horizon throughout all Europe. Sangmeister (1966) has called it a common horizon (*Einheitshorizont*), the most often used term in Europe which acknowledges the existence of the many previously different cultures that went through a "black box" period and unanimously became the Corded Ware culture due to some undefined social or ecological factors. Despite this terminological clarification, two new questions arose: where was the primary homeland of the horizon, and is the horizon a reality or an

illusion? Those two cardinal questions were necessarily followed by a third one: was the culture of the horizon carried by a new ethnic group of people or only by the flow of ideas? One cause of controversy was the fact that when investigating Corded Ware graves, it is almost impossible to find all the main components together in one closed complex. Secondly, some of the components existed for rather a long time, and they are found frequently with later artifacts. For these reasons, the theory of a common Corded Ware horizon received many opponents among the most prominent experts of the Corded Ware culture such as Malmer (1962), Neustupný (1965), Berezanskaya (1971), Artemenko (1975) and others. Critically and carefully accepting the theory as well as seeing its weak points, nevertheless, Strahm (1971), Rulf (1981) and others recognized it as a working hypothesis. Recently, the previously mentioned skeptics have come to agree that the theory has a basis in fact and reflects an archaeological reality, but the common horizon must not be separated from the horizon of the Indo-European ancestral language: the reality was situated at the specific epoch in various cultures of corded pottery together with other elements, quite different ones in separate cultures.

In this presentation, we must eschew sophisticated theoretical generalizations, and using the example of one specific culture (Baltic Coastal), we should like to demonstrate that the horizon was a reality of one discrete period of time. Taking into account the difficulties of finding the entire complex in the graves, it is possible to look for the Corded Ware horizon in the settlements. Let us look into one settlement, Šventoji 1A. Stratigraphically and planigraphically, this settlement undoubtedly existed during one rather short period. The site itself was an area with a strongly built fence and a gate on one side. Outside the gate, there was a refuse pit, while the ground seems to be empty. This makes one suspect the site of being not a real settlement but rather a place for meetings or ceremonies; moreover, a half-knocked down, heavy oaken pillar was found inside. In the refuse pit, among other household things, the entire complex of articles peculiar to the A-horizon was excavated (A-axe, A-amphora, A-cups and raised decorated storage pots). The findings are dated (Vs-22) 4100 ± 100 b.p./cal. 2880-2498 BC and (TA-246) 4120 ± 80 b.p./cal. 2800-2580 BC (Stuiver and Reimer 1987).

About fifty complete A-axes of the so-called early, European, or continental type as well as almost the same number of fragments were found in Lithuania, mainly in the western part of the country

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(Bagušienė and Rimantienė 1974). They are rather simple with a cylindrical butt and a slightly broadened blade. Their more remote evolution differs from that of boat-axes in other regions of Europe. Their degenerated shapes survive until the beginning of the metal age. A-amphorae decorated with tufts of incisions are quite rare (Rimantienė 1984 and 1992); typical ones are excavated only on the sea coast (Šventoji 1A, Nida and Alksnynė), going eastward, only degenerate, later shapes are found. A-cups made up 70% of all ceramic finds in the settlement of Šventoji 1A. They usually were decorated with simple corded ornamentation but without the hanging triangles so characteristic of the classical Baltic Coastal culture.

At the same time, specimens decorated with a fish bone motif are found. Consequently, this is not the earliest complex of the Baltic Coastal culture. Raised decorated storage pots are different, and they usually are found together with bone and wooden household articles inherited from the old culture. Suggesting that a more ancient complex might have coexisted with the main elements of the common horizon, which had grown already into the local culture that had made the basis for the early phase of the Baltic Coastal culture. According to radiocarbon dates, that complex must have existed relatively parallel with the new wave of inhabitants. Anthropological findings (Česnys 1991) at Veršvai, Plinkaigalis and several sites in East Prussia support this idea. Though we lack radiocarbon dates, the grave finds are those characteristic of the earliest graves, consequently they belong to the carriers of the early Corded Ware culture, and at the same time they must be attributed to the A-horizon. Hypermorphy, hyperdolichocrany, very wide face with sharp vertical and horizontal profile of the early corded pottery and battle-axe makers testify that they do not belong to the local population, which was notable at that time for mesomorphy, mesocrany and a rather moderate size of the face at least on the southeastern coast of the Baltic Sea (the territories of Lithuania and East Prussia).

Besides that, the image of the Corded Ware people as nomadic cattle-breeders seems to be dubious. Possibly, part of them earned their living by cattle-rearing; nevertheless, the tribes that reached the territory of Lithuania were, in fact, agricultural. In all investigated settlements of the Corded Ware culture, there are very few cattle bones; the prevailing bones are of wild animals and fish. In regard to this point, a very important wooden model of an ox yoke (about 60 cm in length) was excavated recently in the settlement Šventoji 4A in

association with early corded pottery. If a model of a yoke was needed for ritual purposes, this practice reflects an already firmly established agricultural tradition. Models of oxen and wooden plows are known in other cultures. Little clay models were found in the Ukraine near Belsk (Šramko 1987). Besides the model of the yoke, a very abraded ox horn was detected in the same Šventoji 4A settlement, but an even more significant finding is part of a wooden plow made of a round curved branch with flattened blade and with traces of wear. The cross-section of its helve was quadrangular. It must have been part of an ard of the Døstrup type. This type of ard has been excavated in Denmark (Glob 1951) and the Crimea (Šramko 1992). In addition, there are many carvings of oxen with yokes and ards on the rocks in the Crimea, French Alps and middle Scandinavia in the late Stone Age and during the Bronze Age. Lithuania lies in the center of the triangle which connects these three points. The idea that agriculture was the main occupation of the early Corded Ware makers can also be supported by the wooden ox yoke excavated in Vinelz, Switzerland (Gandert 1966). It should be pointed out that the early Corded Ware cultures in the Baltic area, Switzerland and South Germany are remarkably similar, for they are marginal territories of that culture and preserved best all components of it. Later on, these regions developed in their own direction.

Thus, the A-horizon must be understood as a reality in the same sense as we recognize the horizon of the Indo-European ancestral language. It existed and was spread by human migrations, but not due to the cultural influence, as some authors have imagined. The diffusion of the entire complex, as well as anthropological data, support this opinion. At the same time, we are not going to allege (as it was in old literature) that new-comers dislodged local populations. It seems the intermingling of people and cultures took place. The number of invaders need not be large to introduce a new culture, but the local population must be involved in the process. Some investigators are shocked with the sudden rise and disappearance of the early Corded Ware makers; that is why they tend to neglect the role of the population in the origin of the Indo-Europeans (Girininkas 1994). But the Corded Ware culture must be understood as an epoch, and all epochs of culture (even modern ones, i.e. Romanesque, Gothic, Renaissance, etc.) emerge rather suddenly and are initiated by a small number of new people (masters). The development of culture is usually spasmodic.

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Basic Burial Patterns of Western and Eastern Balts in the Bronze and Early Iron Ages

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On the basis of studies of toponyms and hydronyms linguists have determined that in the period of the Bronze and Early Iron Ages the Balts inhabited a wide territory. Baltic place-names are found as far as the Persante river in Pamaris (Pomerania) in the west, the upper reaches of the Volga and Oka rivers in the east, and the present environs of Kiev in the southeast. The southwestern boundary was approximately marked by the Vistula river, whereas the northern one nearly coincided with the present northern Latvian border (Zinkevičius 1984:fig. 2).

Some linguists find Baltic place-names even outside the boundaries of the outlined territory (Gimbutienė 1985:17). Linguistic data lead to the conclusion that the Baltic parent language was formed in about the twentieth century BC (Mažiulis 1981:5).

This vast Baltic territory of the Bronze and Early Iron Ages is divided into three large groups or blocks: Western, Eastern and Dnieper Balts (Sedov 1980:15). The Western Balts are associated with the West Baltic Barrow culture and the Pamarių (Coastal) or the Face-Urn culture, the Eastern Balts with the Stroked Ware culture and the Dnieper Balts with cultures of the upper Dnieper-Dauguva and the upper Oka basins, as well as the Juchново and Milograd cultures (Tautavičius 1987:93-96).

The present study analyzes the main burial features of Western and Eastern Balts, their similarities and differences, as well as the causes of their formation. In pursuit of a better understanding of the formation of the closely related and at the same time different cultures, with disparate burial patterns, we have to start with the Neolithic period.

Two cultures are known in the eastern Baltic area of the early Neolithic period, namely the Narva and Nemunas cultures (Rimantienė 1984:112). Two new cultures emerge in the area under discussion during the middle Neolithic period: the Comb-Pit Ware culture, the

main occupations of which were hunting and fishing and who came from northeast, and the Globular Amphora people, basically engaged in stock-breeding and who came from southern regions (Rimantienė 1984:181, fig. 99). Changes in the ethnic situations started at that time.

The main changes took place in about the middle of the third millennium BC, when people of the Corded Ware culture disseminated in a large territory of Central and Eastern Europe. People of the above mentioned cultures and the newcomers faced sophisticated and not always peaceful assimilation processes in the second half of the third millennium BC and new cultures emerged. The Pamarių (Baltic Coastal culture) was formed in the territory under consideration on the basis of the Corded Ware culture. In recent years, however, it has become clear that the Corded Ware culture was not so explicit in the eastern part of the Narva culture as compared to the western part. The development of the eastern part of the Narva culture was not so heavily influenced either by the Corded Ware culture or the Comb-Pit culture (Girininkas 1990:3-11).

New inhabitants are always accompanied by new burial habits. People of the Narva and Nemunas cultures inhumated their dead in an extended position, often spreading ochre over the body as, for example, was done at Kretuonas (Girininkas 1985:5-9). Burial of the people of the Corded Ware culture differed greatly. Their dead were buried in a contracted position without ochre in their graves, but charred pieces and ashes have been uncovered in burials (Butrimas and Kazakevičius 1985:14-19).

In the process of assimilation and formation of new cultures, burial rites also underwent changes. At the end of the Neolithic period the first burial mounds appeared in the territory under consideration. The earliest burial mound was investigated at Kaup (Gimbutas 1956:159-63, figs. 96-98).

New ideas and new burial rites spread to the southeastern Baltic region, following the circulation of bronze artifacts. It has been determined that the basic exchange object for bronze was amber, large quantities of which are found on the southeastern Baltic coast (Gimbutienė 1985:57). In the Bronze Age, tribes inhabiting this territory were actively exchanging amber for bronze artifacts as well as raw bronze; it is therefore no surprise to find the largest quantities of bronze artifacts of the period in the coastal zone.

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Considerably fewer bronze items are found in territories located at a longer distance from amber sources and trade routes. External influences were less significant here as well, as a result maintaining a more conservative and archaic culture. Due to the above mentioned reasons, quite different, though related, cultures of West and East Balts were formed.

What are the main burial features of these cultures? As already mentioned, the first burial mounds appeared in the future area of West Balts at the end of the Neolithic period. The custom of burying the dead in mounds spread in Pamarys (Pomerania), East Prussia, the coast of Lithuania and Latvia and was practiced all through the Bronze and Early Iron Ages, until the beginning of the new era. The earliest mounds were encircled by timber posts. Later, stone rings around the burial mounds become widespread. The central part of the mound was often paved with stones and the main grave was arranged on them. Such pavements with central graves prevailed until the late Iron Age as seen, for example, at Kurmaičiai.

Until 1300-1200 BC, the West Balts disposed of their dead by inhumation; the corpse was usually furnished with abundant grave goods of bronze as, for example, at Šlažiai. A few burials of "dukes" have been uncovered, such as the one in Rantava (Rantau) in East Prussia. Here a large male skeleton was found in a coffin and placed on a special platform of stones which had been constructed in the center of the mound. The man was buried with a bronze sword, which represented the status of a sovereign. The grave also yielded a Baltic battle-axe, beads of amber and blue glass, a bronze bracelet and a pin (Gimbutienė 1985:69-71, fig. 35).

In the thirteenth-twelfth century BC, the custom of cremation spread into the territory of the Western Balts and continued until approximately the turn of the era. The burnt remains of the dead were placed into pits or urns. Urns or cremated burials without urns were usually placed in various stone constructions: stone rings, stone "boxes" or large stone structures - "houses" constructed from stone slabs. Some stone "houses," arranged in mounds, yielded a few dozen urns, which had been placed in the center of the "house" (Gimbutienė 1985:fig. 36). Most of the cremated graves were without grave goods.

In about the middle of the second century BC, cremation began to give way to inhumation, and many bronze artifacts have been found as well in such graves, as seen at Egliškės (Grigalavičienė 1979).

Until recently burials of the Eastern Balts had remained unknown thus allowing for different theories about their burial in water, trees or other unpreserved locations. A recent analysis of previous investigations, as well as examination of several new monuments has enabled us to determine that the Eastern Balts buried their dead in cemeteries, contrary to the Western Balts, who buried their dead in mounds (Merkevičius 1988:25-41). Hillocks or elevated places near rivers, lakes or confluences of rivers were usually chosen for these cemeteries. Graves of the East Balts such as those found at Kivutkalnis, Mieleikiai and other sites were usually furnished with bone and stone and, in rare cases, bronze artifacts (Merkevičius 1988:31-33). In comparison to the Western Balts, the shift to the custom of cremation took place here much later. Burying in mounds did not come into practice until after the early Iron Age.

Cremated graves, like those of Western Balts, were in pits or urns. Urns or cremated burials without urns were most often placed in different stone constructions. Cremated burials, also like those of the Western Balts, are usually not furnished.

After some time, the Eastern Balts returned to inhumation, which again became widespread some one to two hundred years later than in the territory of the Western Balts.

Some time later, in the late Iron Age, a few tribes formed in the West and East Baltic zones: Prussians, Sudovians, Lithuanians, Samogitians and others. The differences of the material and spiritual culture of these tribes were established in the Stone and Bronze Ages and persisted during the subsequent periods.

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Some Remarks about the Indo-Europeanization of Northern Europe (the Case of the Eastern Baltic Region)

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The question of the Indo-Europeanization of Northern Europe, as well as that of the origin of northern Indo-Europeans, including those having lived in the eastern Baltic region, are closely connected with the Corded Ware culture (CWC) on the one hand and to the local cultural medium on the other.

The Corded Ware culture and its genesis have been the subject of large-scale discussions, especially during the last thirty years. While theories of migration and diffusion are widely reflected in the archaeological literature and have attracted large audiences, these questions are still vital and debatable (Kristiansen 1989).

When trying to explain the Indo-Europeanization of Northern Europe, the question of the earliest Corded Ware cannot be passed over, especially when accepting or refuting the concept of a common European CWC horizon (in other words, when trying to trace the earliest common CWC elements in the territory of Europe). The archaeological literature has a number of publications concerning the common European horizon (Glob 1945; Struve 1955; Buchvaldek 1957, 1969, 1980, 1986, 1992 and 1994; Fischer 1969; Lanting 1982; Sangmeister 1981). Starting from the early CWC A-type battle-axe, A-type amphora and A-beaker, already distinguished by P. Glob in the middle 1940's, the solutions to this question have not been unanimous.

The question of the common European CWC horizon currently cannot be settled simply. Such a horizon is attributed to a infrastructure of a primarily stabilized core zone within the limits of a definite region (Strahm 1992), from which the horizon expanded to outer zones (Randzone and Aussenzone). Some also accept the possible development of simultaneously existing cultural units while still preserving the independence of the A-horizon for some time (Machnik 1979 and 1994). This horizon is then interpreted also as an A-style communication system or an A-type complex of finds (Ebbesen 1994). It has been noted also that this horizon is a new phenomenon

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showing no direct continuity with any definite culture of the region, such as those of Funnel Beakers, Globular Amphoras or Pit Graves (Merpert 1976).

Therefore, the presence of this common European CWC horizon must still be recognized. Taking into account that this is one of the main arguments in the elaboration of the conception of the CWC migration (Damm 1991), it may be assumed that this process affected, to a greater or lesser extent, different European regions.

The very earliest CWC in the eastern Baltic

The eastern Baltic represents one of the regions of CWC distribution in Europe and experienced the presence of early horizons of the mobile CWC culture, which undoubtedly had a definite role in the Indo-Europeanization of this region. The eastern Baltic was not influenced by the first agricultural culture — that of the Funnel Beaker culture. This first agricultural group in Northern Europe, which we know only through fragments of individual beakers, was connected to the local culture perhaps only through mutual, though still rather unstable, relations. Rather, it received stronger impulses from the Globular Amphora culture and was the territory into which the first representatives of this Indo-Europeanized world moved (Rimantienė and Česnys 1990).

The local cultural medium preserved its material culture, traditions, the basic physical makeup of the population, language and ideology but gradually split up when these groups of newcomers entered by primarily going around or crossing territories inhabited and controlled by these local tribes.

This was the time when the extensive tribes of the Comb- and Pit-Marked Pottery culture had left the eastern part of Latvia and the littoral zone in the south of Estonia, leaving the Post-Narva cultural unit in the inner territory and the Sārņate-Šventoji culture complex in the southeastern and eastern littoral of the Baltic Sea behind them. This was also a time of great changes in the eastern Baltic when CWC groups appeared in the Lithuanian littoral, Latvia and Estonia (Rimantienė 1980; Šturms 1970; Vankina 1970; Loze 1979; Jaanits 1966).

This was a process of infiltration of small groups of the very earliest CWC people into the local culture. They did not, however, lose their identity and specific features. The conception of this migration by infiltration is one of the possible variants in explaining

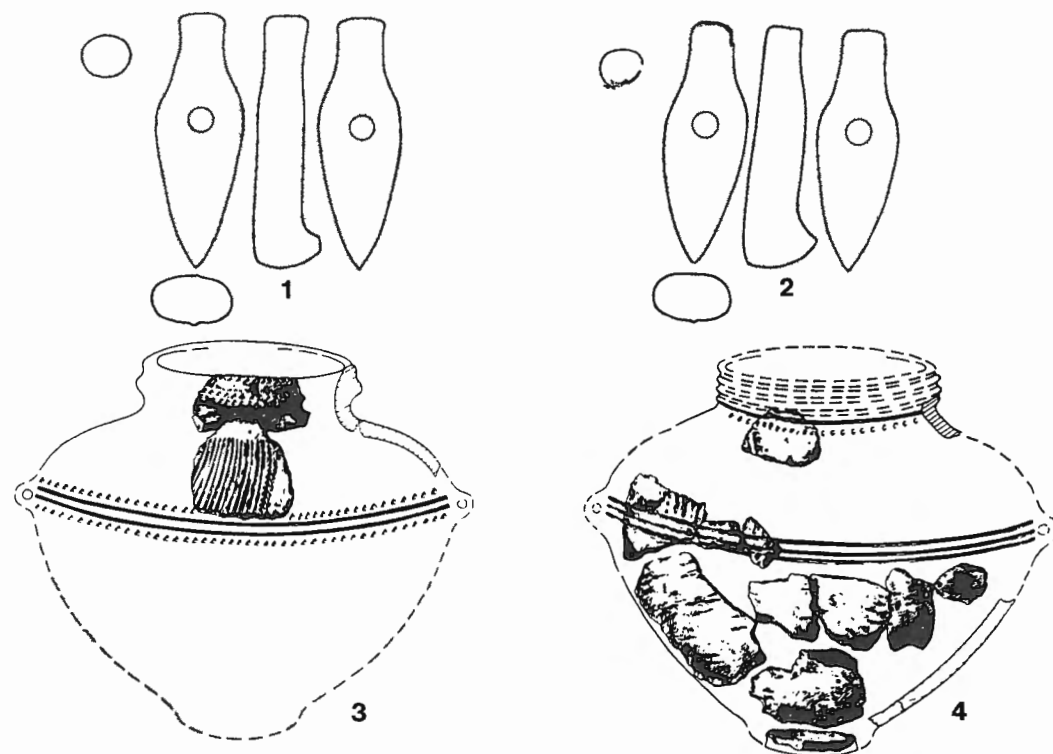


Fig 1: The very earliest CWC elements in the eastern Baltic Region 1-2) A-type battle axes [from Vircava, Jelgava district and Murāni, Rēzeknes district, Latvia]; 3-4) A-type amphorae [Abora I settlement, Madonas district and Zvejnieki cemetery, Valmieras district grave 137, Latvia] (after Loze 1995; Zagorskis 1987).

the adoption of the CWC people in the Lubāna Lake Depression (Neustupný 1982).

The common European horizon of the early CWC in the eastern Baltic should be considered a witness to the existence of discrete components of early CWC which, while taking into account radiocarbon dating, may still to some extent be proved (Loze 1991 and 1992). It may be linked with the general infiltration process of Indo-European elements into Northern Europe (Gimbutas 1986).

If the presence of elements of the early CWC in the eastern Baltic may be considered the first Indo-Europeans, then their appearance really brought with it cardinal changes — another material culture with innovations in the technology of making ceramics (A-type amphora, A-type beakers and coarse beakers with short, wavy moldings), skill in making stone battle-axes of refined forms and richly ornamented protective wrist guards when using a bow.

These representatives of the very earliest CWC buried their dead in single graves on banks of rivers and lakes (Sarkanī and Vircava in Latvia, Spiginas in Lithuania), supplying them with a stone axe, an amphora or other grave goods (Butrimas 1992). They consciously or unconsciously used the cemeteries of local tribes as at the Zvejnieki cemetery in the northern part of Latvia. Here a completely destroyed

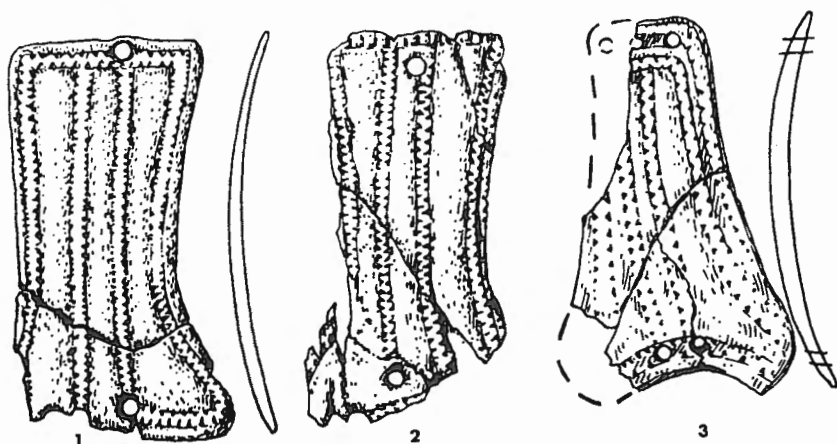


Fig. 2: Antler wrist guards of the early CWC in the eastern Baltic region. 1-2) Zvejnieki cemetery; 3) Abora I settlement.

grave of an adult individual (No. 137) contained an A-type amphora (Fig. 1:4) and other grave goods, and a destroyed grave of an adolescent (No. 186) had grave goods such as richly ornamented antler protective wrist guards (Zagorskis 1987) (Fig. 2:1-2).

The very early population of CWC left A-type amphora in settlements Šventoji 1A and Jodkrante 3 on the littoral of the Baltic Sea (Rimantienė 1984) as well as at Abora I, Iča and Kvāpāni II settlements in the eastern part of Latvia (Loze 1979) (Fig. 1:3).

By leaving behind carefully made A-type battle-axes, the majority of which come, of course, from destroyed graves, the CWC people marked their entrance into the basins of the greatest rivers of the eastern Baltic (the Venta, Nemunas, Lielupe, Daugava), reaching the northern littoral of Estonia and that of Finland (Fig. 3).

Some of these people stayed in the Fatyanovo cultural region — in the upper Oka and upper Volga basins (eleven a, d types of battle-axes according to the classification of D. Kraňnov) (Gadzyatskaya 1976) as well in the middle Dnieper region (Strelitsa, Dolinka etc.) (Artemenko 1967).

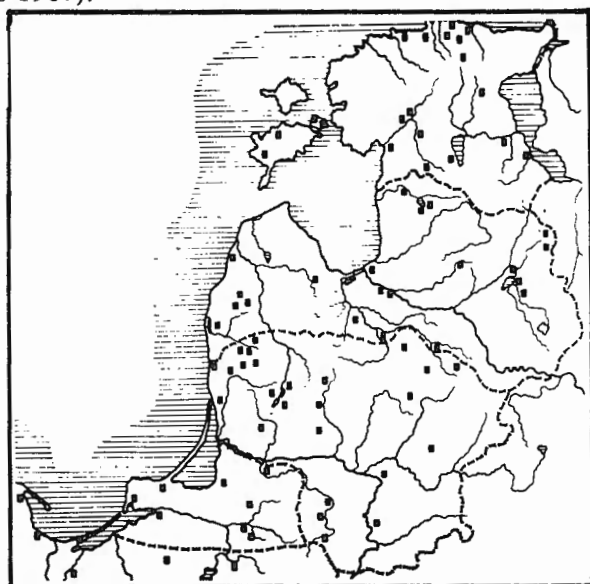


Fig 3: Map of the distribution of A-type battle-axes in the eastern Baltic region (after Kilian 1955; Šturms 1970; Jaanits 1971; Rimantienė 1974; Loze 1974).

The early CWC population

The presence of the second group of early CWC population in the eastern Baltic region manifests itself in other elements characteristic of this culture in making battle-axes of other types and reddish amphorae with a fir-twigg ornament (Fig. 4:7). These thin-walled reddish amphorae are well-known and common as grave goods in Central Europe (Südharz-Unstrut region, Saxony-Thüringen, Poland Minor and elsewhere) (Loewe 1959; Machnik 1979; Matthias 1974, 1982 and 1987) and in the CWC Lubaczow cultural area in basins of the western Bug and Sana (Sveshnikov 1974).

The appearance of southwestern impulses of early CWC is evidenced by finds of fragments of this type of amphora in the coastal site Sventoji 1A in the western littoral of Lithuania (Rimantienė 1984) and in the Kvāpāni II site in the Lubāna Lowland (Loze 1978a) (Fig. 4:7).

The early CWC people laid their dead in single graves or in small cemeteries containing two, three or up to ten individuals in flat elevations near rivers or lakes (Fig. 5). In the eastern Baltic no big CWC cemeteries have been found, and a characteristic feature are burials also in places of settlements (four cases) (Jaanits 1952 and 1957; Loze 1979 and 1993).

More than forty burial sites are known, and they, judging by the map, were localized in settlements (Fig. 5). These regions are the Kuršiu dunes in the western littoral of Lithuania, as well as in the middle part of Lithuania (the Nieman and Venta basins) (Butrimas and Kazakevičius 1985; Butrimas 1992), the middle southeastern and northern parts of Latvia (Loze 1979; Zagorskis 1987), the Võhandu and Emajõgi basins in Estonia (Jaanits 1952, 1957 and 1983), and its northern littoral with the eastern shore of the Saaremaa Island (Jaanits 1952). More than twenty individuals have been buried in flexed position (Fig. 6). One single grave had been supplied with an amphora of another Central European type which has a very rare kind of ornamentation — a combination of struck zones in vertical groups and triangles (Skaistkalnes Selgas) (Fig. 4:2).

The inventory of this grave also contained fragments of beakers with herringbone and corded ornament (Fig. 4:5, 6) and the composition of vessels of this grave resembled that of the individual burials in the Schlosswippach barrow in the Weimar District (Loewe 1959).

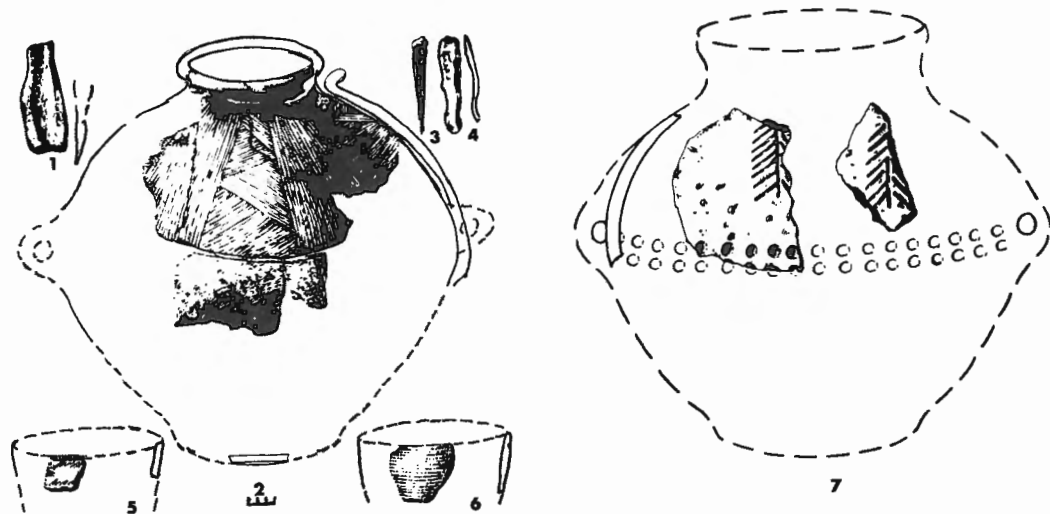


Fig 4: Early CWC elements in the eastern Baltic Region 1-6) Grave goods from a single grave Skaistkalnes Selgas, Bauska district, Latvia; 7) reddish amphora fragment with fir-twig ornament (Kvāpāni II settlement, Rēzeknes district, Latvia).

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The inventory of single graves in the eastern Baltic (Ardu, Tika) contained battle-axes and beakers with herringbone ornament (Indreko 1938; Jaanits 1952). The numerically rather small groups of the early CWC population embraced not only the coastal region of the Baltic but also the inland areas, using the Lielupe basin with its tributaries for their expansion, mastering the best soils of Zemgale and crossing the Daugava, and thus reaching once more the Lubāna Lake Depression and distributing in the basins of the Vöhandu, Emajõgi, Võrtsjärvi and Kunda lakes in Estonia (Fig. 5).

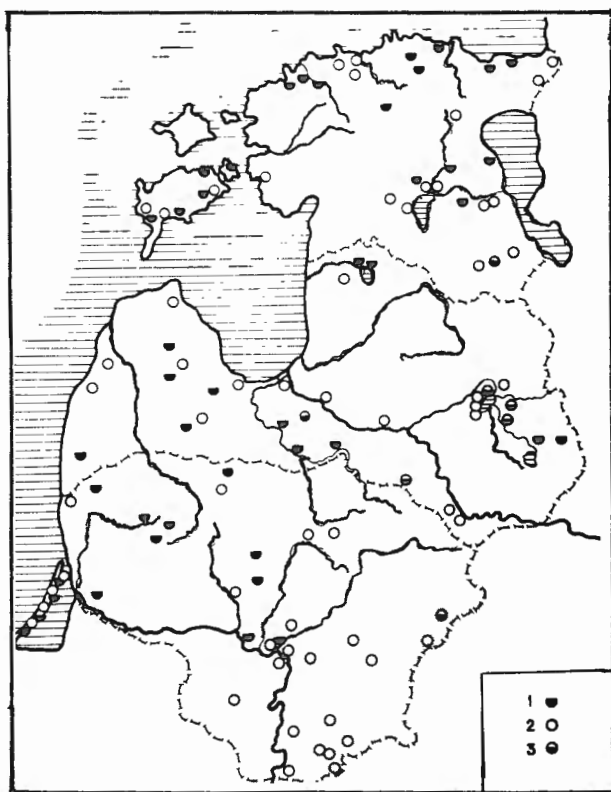


Fig. 5: Map of the distribution of CWC graves and settlements in the eastern Baltic Region: 1 = cemeteries, 2 = settlements; 3 = burials at the sites (after Jaanits 1952 and 1966; Loze 1974, 1979 and 1987b; Butrimas 1992).

The CWC people left broken battle-axes in settlement sites. More than fifteen samples of these have been found at Abora I and other settlements in the Lubāna Lake Depression (Loze 1979). The infiltration of the newcomers into the local cultural flow in the Lubāna Lake Depression probably was not always peace-loving in character. Moreover, the difference of types of battle-axes in the Lubāna Lake Depression, including also the presence of later more specific forms — Karlova, sharp-butted etc. — proves that the Lubāna Lake Depression

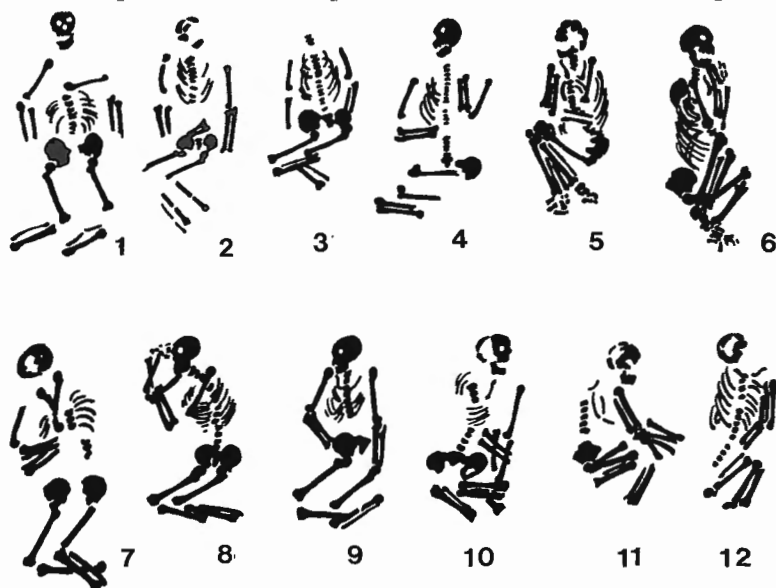


Fig 6: Positions of the deceased in ECWC graves in the eastern Baltic region 1) Ardu; 2, 3, 9) Zvejnieki [307, 186 & 197]; 4, 7, 12) Kvāpāni II [9, 13 & 7]; 5, 6) Plinkagailis [241 & 317]; 8) Sope; 10, 11) Abora I [6 & 33] (after Indreko 1935 and 1938; Jaanits 1952; Loze 1979; Zagorskis 1987; Butrimas and Kazakevičius 1985; Butrimas 1992).

belonged to another CWC variant (Loze 1979). This is evidence of sporadic links of people of the eastern Latvian CWC in the later stage with the CWC people having inhabited the southern littoral of Finland and Estonia.

The presence of the Fatyanovo axes (Kraňnov 1972) in the eastern part of the eastern Baltic region (Rimantienė 1974), in its turn, points to a link of the population of this region with the eastern

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territories. It should also be mentioned that the population of the Lubāna Lake Depression had also made a special type of pottery similar to corded ware pottery, using fabric stamps (Loze 1979; Vankina 1980). This type of ceramics was used also by the population of the Estonian islands and Gotland (Nihlen 1927; Stenberger 1943; Jaanits 1985).

Closely spaced perpendicular cord impressions arranged in large triangles (*senkrechten Schnuredrücken*) have been pressed onto the surface of the amphora by early CWC people of Central Europe (Loewe 1959; Matthias 1987).

The anthropological type of the CWC population

The CWC population, also including the earliest anthropological type, is represented in the eastern Baltic by a pronounced dolichocranic brain case of the skull and a broad and strongly profiled face. It is massive and broadfaced, with a strongly advanced nose and high nose root (altogether more than twenty skulls have been measured) (Mark 1956a and 1956b; Denisova 1975 and 1987). It should be stressed that this type has also been extremely hypermorphic. The face has pronounced vertical and horizontal profiles, broad and low eye orbits, the formation of the skeleton was gracile and the stature small (Česnys 1985, 1991a and 1991b).

The anthropological type of the eastern Baltic of the very earliest (Sarkani) and early CWC population (Karlova, Keo, Ardu, Sope) is different from the narrow faced dolichocranic type of Saxony-Thüringen (Denisova 1985). At the same time, it has been pointed out that there are some morphological differences among anthropological types of the very earliest and later CWC population (disappearance of the archaiostenodolichomorphic phenotype) (Swidetzky 1978; Menk 1980).

These very earliest and early CWC people in the eastern Baltic were stock-breeders, because the grave goods contained ovicaprids (Ardu, Tika, Sope) and pigs (Kunila, Sope) (Jaanits 1952 and 1983). Some of the awls, chisels and knives were made of bones of domestic animals by the CWC people. At settlement sites, for instance, Abora I in the Lubāna Lake Depression, among domestic animals making only 6% of whole mammals, there were ovicaprids, cattle, horses and dogs.

Ideology

The people of the early CWC brought with them major changes

in the ideological sphere; they practiced the cults of the sun, moon and other celestial bodies. It is in the amber ornaments from this period that the finer points of the formation of this new ideology are reflected, and which were distributed in the newly acquired territory. The development of amber working associated with the CWC of the eastern Baltic was something of a golden age, when considerable efforts were applied to obtaining raw material and when a developed school of amber working existed.

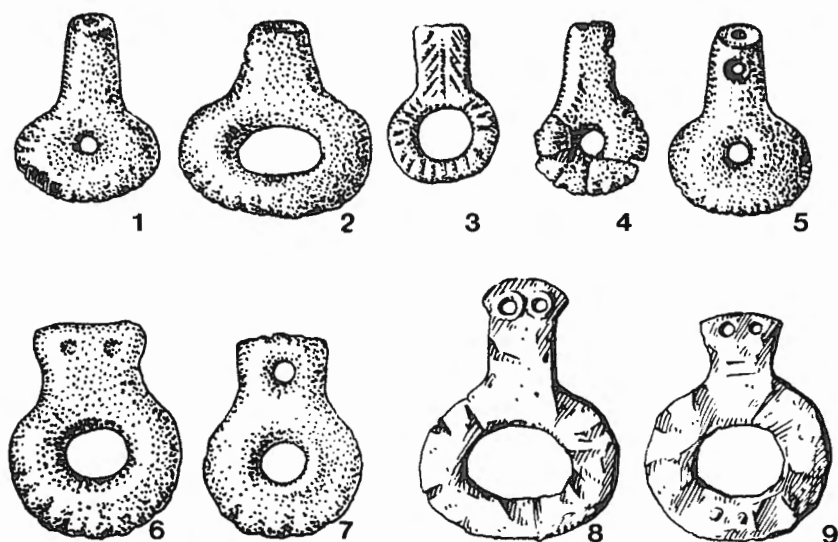


Fig. 7: Perforated Disk Pendants 1, 2, 4, 5) Amber pendants from Abora I, Lubāna and 3) from Moscha Chodosovichi cemetery, barrow 11, in the middle Dnieper region; 6) gold samples from Pefkakia magula Thessaly; 7) Aleptrypa cave, southern Pelopennese; 8, 9) Aravissos gold hoard, Macedonia (after Loze 1975; Artemenko 1976; Makkay 1976 and 1985).

This high standard of the amber working craft was characteristic of the inhabitants of Abora I and other settlements of the Lubāna Lake Depression, as well as in the littoral regions — in the Kuršiu dunes. Besides the sun disks and symbols of the moon in the form of lunulae (they were made also of bone) one more celestial symbol in the form of a perforated disk had appeared (Fig. 6:1-5). In the Lubāna Lowland they were worn by women (as shown by the grave No. 33 of a woman

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in the Abora cemetery located in the middle of the settlement) where the grave goods consisted of two such pendants (Loze 1979).

This perforated disk pendant also constituted a part of the very rich grave goods. Here it was worn by a man buried in barrow No. 11 in the Moskha Khodosovich cemetery in the Middle Dnieper basin below Mogilev (Artemenko 1967) (Fig. 6:3). This fact testifies to the great significance of this peculiar symbol in the religious ideas of the CWC people and may even be in their world outlook of the universe. Such pendants made of copper, gold and silver were known also in the southeastern part of Central Europe (Makkay 1976 and 1985) (Fig. 7:6-9). N. Chmikov has expressed an opinion that these pendants may be linked as symbols with cosmological ideas associated with the constellation of Taurus (1990).

Conclusions

The early complexes of the CWC represent only one of many manifestations of the Indo-Europeanization process connected with the appearance of a population of stock-breeders, embracing definite regions of the territory and leaving a lasting influence on the local cultural medium (the so-called Post-Narva in Latvia and Narva cultures in Lithuania). The co-existence or confluence with the local population in the hunting-gathering economy of which rudiments of food producing had appeared (Loze 1988) might be lasting (protracted) embracing the whole 450 year long time of existence of CWC until in the early Bronze Age on the map of the eastern Baltic. In neighboring regions a number of new archaeological cultures appear, recognizable by specific Lubāna type ceramics and other traits (Loze 1979) and traced also in regions of the upper reaches of the Daugava as the North Belorussian culture (Miklyaev 1969; Miklyaev and Semënov 1979; Miklyaev et al. 1991; Zaïkovskii 1985) and possibly also in the middle Dnieper as the Maryanovo culture (Berezanskaya 1982). This was the new stage when the Lubāna Lake Depression evolved into a new culture-ethnic situation which could perhaps be favorable for the further development of Indo-Europeanization.

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The Origin of the Vistula-Dnieper Development of the Community of Sub-Neolithic Cultures¹

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The problem of the origins of the Vistula-Dnieper sub-Neolithic/Neolithic cultural community has been outlined in the works of A. Gardawski (1958 and 1959) and by D. Y. Telegin (1968). According to their interpretation, within the lowland and forest zones at the borderland between the eastern and western part of Europe in the fifth through second millennia BC, a hunting-gathering system, followed afterwards by early agrarian cultural units, may be distinguished. These entities bear the marks of generally well-documented genetic and developmental ties, which have been interpreted, among other things, in ethnic terms as a pre-Slavic community. In the development of this community, according to this interpretation, two stages may be distinguished: comb-pierced (I) and Trzciniec (II).

In later, succeeding studies of the above mentioned phenomena, attention was focused on stage II. Outlining the formal-typological motivation for the Oder-Desna range of the Trzciniec culture (TC) in an exclusively schematic form, the authors adhered to older, endogenous "genetic" explanations (cf. Cabalska 1961; Berezanskaya 1972; Charnyavskii 1978:45). Hence, in those works a creative deployment of the concept of Gardawski-Telegin outlined in the introduction is absent.

The cognitive attractiveness of this concept began to be perceived anew in studies of (A) the association of the development of the lowland and upland trend of cultural integration at the border of the European "East" and "West" and (B) the non-Carpathian sources of the Trzciniec culture system. Personal involvement in research work

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in both of these disciplines justifies this recapitulation of the current solutions and doubts.

Lowland-forest equivalents of the old upland trend toward integration

The studies of the old upland trend towards cultural integration, in which we are interested, are connected with the border area of the circum-Pontic and circum-Baltic spheres. The conclusions drawn from these studies are that (a) until about 3600/3500 BC we can observe a unilateral colonization action in the development of this territory — an influx of Balkan-Central European early agrarian communities into the territory at the western borders of Eastern Europe; (b) after the discontinuity mentioned, bilateral colonization actions appear (also called remigrations or reverse migrations) which initiated a multi-stage process creating a definite “borderland community.” This community would also include certain enclaves of the lowland, with an intensive, long-lasting tie with the upland zone — mainly at Kuiavia.

The question of the lowland-forest interactions may therefore be resolved into the question about the range of imitation of the processes outlined above.

a. One can see, at least in the formal-chronological dimension, considerable similarities. Beginning at the end of the sixth millennium BC, the Linearbandkeramik culture (LBK) was settling the Central European lowland, concentrating on the borderland with the forest-East European zone. Here compact, long-lasting enclaves of LBK settlement were created, e.g. the Kuiavian, Chelmino or Volhynian agglomerations, the development of the oldest of which we can also find — the Zofipole (I) settlement stage (Czerniak 1990; Pyasetskiĭ and Okhrimenko 1990; Kirkowski 1994). One should emphasize that the zone of the LBK borderland was the easiest accessible representative of the early agrarian cultural sphere for the late Mesolithic communities of the western segment of the forest zone (Fig. 1).² The above observations negate an opinion, common among the research workers of Eastern Europe, which rejects osmotic values of the Bug-Dniester culture (cf. Telegin 1968; Danilenko 1969). An important problem remains to be solved, namely that of the range of participation

² The following abbreviations are used in the accompanying figures: DDC = Dnieper-Donets culture, NC = Niemen culture and TC = Trzciniec culture.

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of this community in the transformations of their northern hunting-gathering neighbors. For the analysis of this phenomenon, there are two kinds of premises coming from sources: (aa) direct evidence of settling by LBK of the interior of the forest zone and (ab) participation of early "band" traditions within the oldest level of the local sub-Neolithic cultures (the Strumel-Gastiatin-Dubichay-Sienchyce-Sokołówiek-possibly Zedmar horizon).

aa. The presence of LBK in the area of the interior of the forest zone can be proved by pottery from the vicinity of Pskov, characterized by Miklyaev et al. as deriving from the LBK stylistics from "the area between the Rhein and Mosere" (1987 and 1994:93). The controversial character of this evaluation, which has been signalled by technological characterization of the discoveries (S. Kukawka, personal communication) may be lessened by indicating similar deviations from the "band" technological stylistic module that have been observed among the analogically peripheral materials of the Limburg type within the LBK ecumen and coming from the French-Belgian borderland. In this context, note the evaluation of Kuiavian assemblages of the Podgaj type by Czerniak (1994:121 with further bibliography). Thus, it seems that the discovery of A. M. Miklyaev's team opens a new, and very inspiring, direction in documenting the participation of the Balkan Central European sources of the East European sub-Neolithic. Thus, a reanalysis of a number of older complexes should be conducted with the view of identifying the approximate "quasiband" traditions (manifestations of "peripheral archaisms" or syncretic cultural systems).

ab. Considerable probability of such a discovery seems to be suggested by observations of a distinct participation of Balkan pottery traditions among the oldest Pripets-Niemen pottery of the "forest zone." What is meant here, in particular, are the materials of the Dubichay and Sienchyce-Sokołówiek types that are obviously characterized by the chamotte technique of forming the ceramic mass (Czerniak 1989). This is emphasized with particular clarity in the Sienchyce type (Isayenko 1976 and my own observations), which, in view of the location of these materials in the area bordering the Volhynian LBK agglomeration, makes this observation especially illustrative for the hypothesis promoted here (cf. § a, above). Also some motifs in the sources quoted here, particularly the pierced ones, can be considered to be a supplementary argument for genetic relations with the LBK.

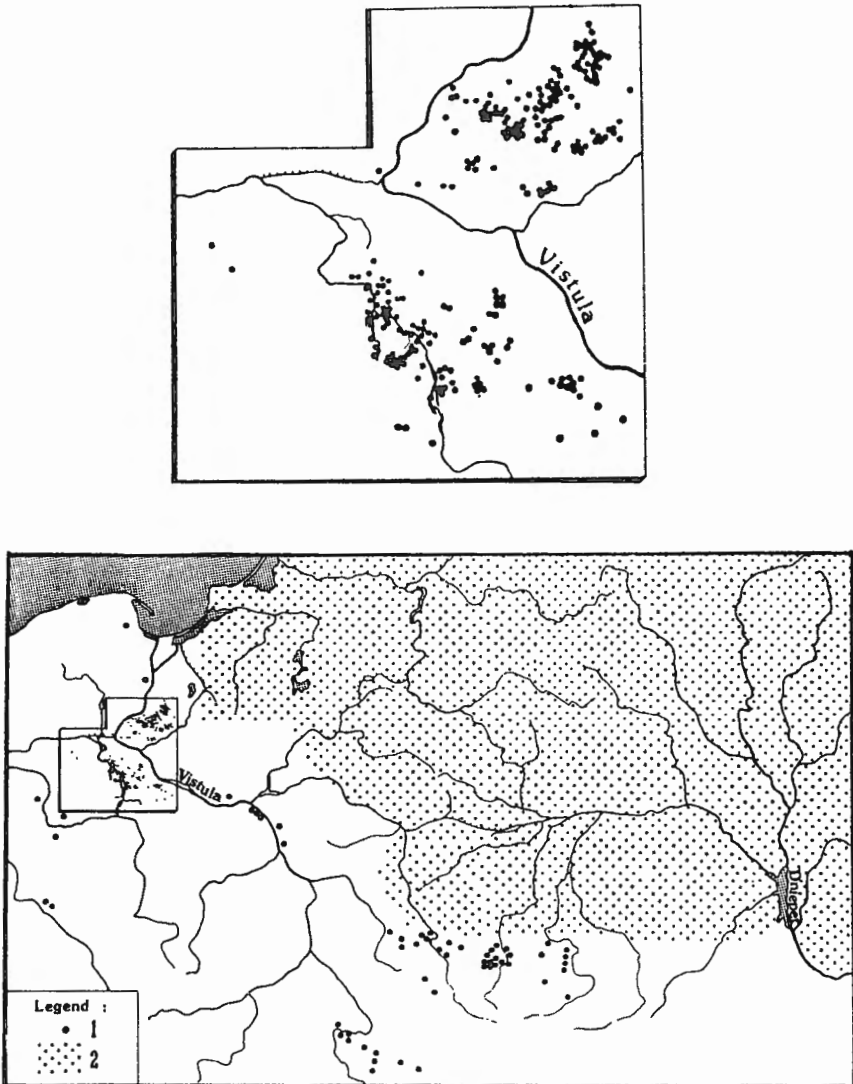


Fig. 1: 1) Spatial relations between the ecumen of the LBK; 2) the forest-East European zone.

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Less distinct is the continuation of the Balkan-Central European influences on the environments of the East European sub-Neolithic in later stages of the development of the Band-culture sphere after LBK. These cultures (mainly the group connected with the Polgar sphere — the Brześć-Kuiavian group, the Hoszcza-Werbkowice "culture" and the Lublin-Volhynia culture) are settled similarly in the borderland area with respect to the forest zone. Kuiavia, the Chelmno District and Volhynia reveal numerous contacts with the epi-Mesolithic population (cf. Czerniak 1994:120n). The problem of the scope of these influences in the northeastern direction and in the area of the Niemen and Pripets river basins remains. For instance, a comparative analysis of the chamotte-breakstone technology which is registered among the pottery of the Strumel-Gastiatin-Dubichay-Sienchyce-Sokolówek horizon would be very interesting.

To conclude the above remarks, one may suggest that in the period 5100-3650/3600 BC, a cycle of phenomena connected with the Baltic trend of the East European sub-Neolithic is formed in which the early agrarian traditions of the West (Balkan-Central European) are mixed with the hunting-gathering traditions of the East (Central Asiatic-Ural, Caucasian). The western component may be considered in this case as a distinguishing factor of the oldest (initial) form of the Vistula-Dnieper community in which we are interested. However, one should emphasize that the maximally western range — marked by materials of the Dubichay-Sokolówek type — extends at present exclusively up to the borderland of the Vistula catchment area, in principle, not exceeding the physiographic border of the eastern and western part of Europe, i.e. the Bug-Dniester limes (Koško 1991). However, one cannot preclude the presence of single settlement points of the representatives of this cultural environment deep in the Central European lowland (i.e. in the river basin of the Vistula, and even that of the Oder) which can be suggested by the more recent studies, for example in the area of the Lubuska District.

b. The so-called Bug-Dniester limes was disturbed in the planitation dimension only about 3650/3600 BC. Looking from the western perspective, we can see that this date initiates a macrospatial neolithization as a result of colonization of new areas by the Funnel Beaker culture and then by the Globular Amphora culture. Communities of these cultures exceed the previously sharply delimited settlement areas — the so-called central ecumenes (mesoregional centers of the settlement network (cf. Prinke and Szmyt 1990)) going

deeply into the territories delimited hitherto by the hunting-gathering communities (cf. Kobusiewicz and Kabacinski 1993). One of the directions of this colonization is northeast and east. P. M. Dolukhanov and V. P. Tretyakov distinguished a stage in the development of the Dnieper-Donets Neolithic in which the main factor of cultural transformation would be the "Western" Funnel Beaker culture (Dolukhanov and Tretyakov 1979). Its influences would be of greatest importance for the cultural transformations in the southern part of the East European forest zone — in the river basins of the Pripyets and the Niemen. Similar conclusions were drawn by V. F. Isayenko who dated this process a little bit later than the authors mentioned above (1976). A dispute over chronology is not of great significance for us here as in both cases the dating was based on the references to the western cultural systems which makes both evaluations approximate as a result of reanalysis of the method of references. To speak in the most general terms, what is meant here is the time after 3650/3600 BC.

The transformation process discussed here may be identified in the area of the Niemen and the Pripyets with the stage of development of the Niemen culture proper (i.e. without the previously commended on Dubichay stage), whose essential distinguishing factor can be considered the state of the borderline between the "typical" East European sub-Neolithic and the traditions of the Balkan-Central European Neolithic. This state seems to be even more clearly distinguished by the so-called Volhynian Neolithic culture, which has recently been distinguished from the Niemen culture (Okhrimenko 1993). The Niemen culture expands deep inside the Vistula and the Oder river basins and is marked in a more distinct version after 3150 BC. Enclaves of its settlement are distinguished — along with their westward movement — by a more and more clearly syncretic character (cf. Olszewski 1987; Krzeszowski 1991). This state has been best documented within the Warsaw Valley, the so-called Linin type (Kempisty 1973). At about the middle of the third millennium BC, infiltration of the sub-Neolithic communities of the Niemen culture reached its apogee; it was surely at that time that they crossed the Oder. The problem of the typological-genetic identification of the sub-Neolithic-East European features within the river basin of the Elbe and the catchment area of the North Sea still urgently requires study, (cf. the concept of the Elbe-Dnieper community in Gardawski 1958).

Another problem also remains; how much and at what time were other "non-Niemen" (in the meaning of the Niemen culture) East

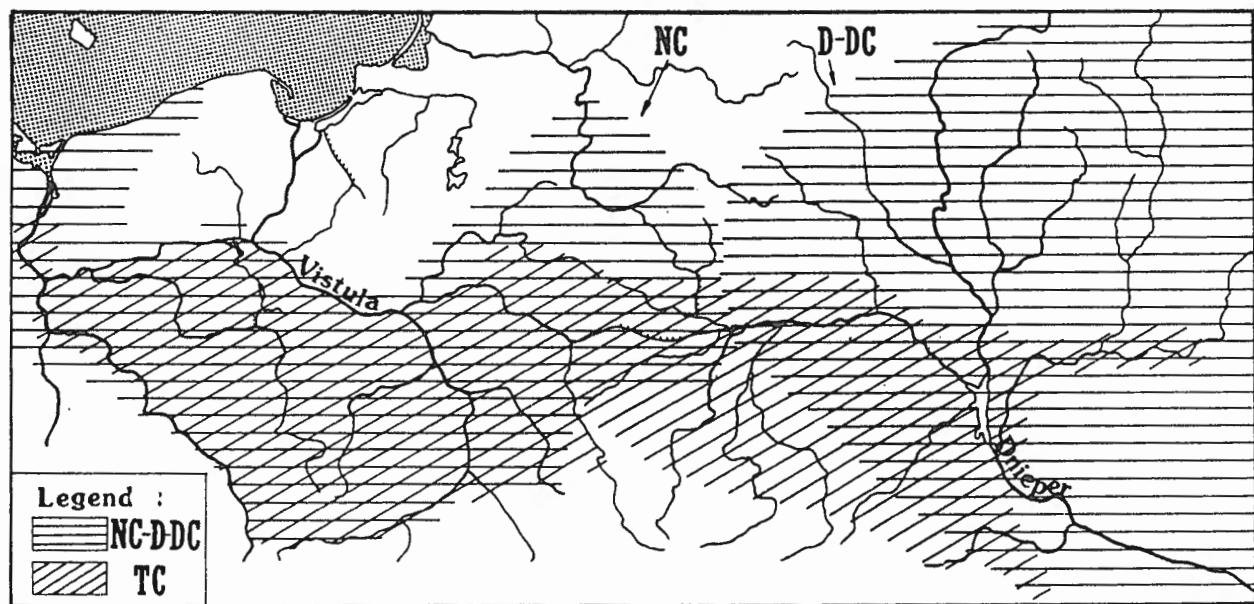


Fig. 2: Spatial relations between the cultures of the Comb and Pierced sphere 1) the Dnieper-Donets culture and the Niemen culture; 2) the Trzciniec culture (phenomena of the Trzciniec horizon).

European environments of the sub-Neolithic involved in this process? The recently suggested evaluations of the early participation in this process by the Narva culture (Kukawka 1991) are poorly documented (cf. Koško 1988). It seems that both the Narva culture and the Comb culture appear west of the Bug-Dniester limes at a relatively late, about the middle of the third millennium BC.

Trzciniec culture as a stage of stabilization of the Vistula-Dnieper cultural community

In the studies of the origin of the Trzciniec culture or, to be more exact, the Trzciniec horizon of the processes of cultural integration in the lowland-forest zone (Koško 1979), most attention has focused on the "southern factor" — mainly from the early Bronze Age Danube civilization. Bearing in mind the postulated maximally wide spatial framework of a given culture (Cabalska 1951; Berezanskaya 1972:138), it is difficult, however, to indicate a genetically and formally compact cultural system of the "South" with a similarly extensive expression of civilization.

This observation brings to one's mind a principle that one should adhere to the endogenous traditions. In practice, this means referring them to the combed-pierced stage of the Vistula-Dnieper cultural community. This conclusion is supported particularly well by observations from the area of Mazovia and Polesie where materials characterized as Trzciniec ones co-occur with forest pottery (genetically connected with the so-called western group of cultures of the combed-pierced pottery (Telegin 1968:129)). This co-occurrence has the appearance of an indirect indication (the connection of both cultural phenomena with a definite type of natural environment), as well as the direct manifestations of genetic dependencies that are documented mainly in the sphere of technology and styles of pottery. It should be emphasized that the Mazovia-Polesie sites of the Trzciniec culture show an area of greatest concentration of its settlements, identified from the perspective of studies of the origin of the upland Trzciniec as the initial one from the point of view of development.

Thus one can interpret the Trzciniec culture in terms of a short-lasting state of stabilization within the lowland-forest zone of a two-way flow of models, which — particularly after 3150 BC — encompassed the Dnieper and Vistula river valleys, transgressing episodically into the above-mentioned spatial framework in a westerly direction at the beginning of the second half of the third millennium

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BC at the Oder river basin. This short duration would suggest a lack of continuity of the "Trzciniec area" in the later stages of cultural development of the "borderland zone" of East and West. One of the causes for the increase in differentiation would be genetic variations of the "southern factors," traditionally interpreted as a basic source of integration — the late Únětice-Vieterov-Otometri and the late Catacomb "mnogowalikowy" cultures.

These remarks serve to emphasize the need for integrated studies of the specific state of culture in the borderland zone between the European East and West. The time of its formation and genetic interrelations do not preclude identification with the system of the pre-Indo-European community as expressed in both of the competing contemporarily applied models of Indo-European topogenesis: an early Neolithic Anatolian (cf. Renfrew 1987) and an Eneolithic steppe (cf. Mallory 1989).

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Ceramics and Age: a Correlation in Early Indo-European Society

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To reconstruct the social structure of a prehistoric people is a difficult task at best, and when we have little but graves from which to begin, the task becomes even more arduous. This study is an attempt to help determine the social status of juveniles found in graves on the Volga-Don steppe by examining the ceramics that were placed in their graves. While the graves in question may not strictly be located in Northern Europe, they do come from the region believed by many to be that from which the earliest Indo-European speakers dispersed into Northern Europe. Indeed, the Yamnaya culture from the Pontic-Caspian region, radiocarbon dated to ca. 3600-2200 BC, has been termed "the last cultural entity which may putatively be assigned a Proto-Indo-European date" (Mallory 1989:210), and thus provides information on Indo-European infancy — both literally and figuratively. It is hoped that this preliminary examination may aid in future comparisons between the steppe, Northern Europe and the rest of the Indo-European world. Ultimately, this task is directed toward a better understanding of tangible remains of Indo-European social structure (see also Mallory 1990).

This paper is an outgrowth of a larger work where I have catalogued the Eneolithic and Early Bronze Age vessels in the Volgograd Museum.¹ This pottery comes from the Yamnaya culture and its successor, the Catacomb culture of the Volga-Don steppe (Jones-Bley forthcoming).² While Yamnaya and Catacomb graves are

¹ I am deeply indebted to the excavators attached to the Volgograd Museum, in particular V. I. Mamontov, who first invited me to participate in his excavation on the Volga-Don steppe. It is only through his extreme generosity and the equal generosity of A. N. D'yachenko, V. M. Klepikov, E. P. Mys'kov, I. V. Sergatskov and the late V. P. Shilov in allowing me access to their unpublished excavation reports that this research was possible. I, however, am responsible for any errors in my conclusions.

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often found in the same kurgan, they are distinguishable not only by the shape of the grave pit (Catacomb graves are characterized by a niche, hence their name, rather than the simple pit of the Yamnaya graves) but also body position and the pottery. Catacomb pottery has a flat base, but Yamnaya pottery has a pointy or rounded base (Fig. 1). Here I propose to look at this pottery from the points of view of size and decoration to determine what differences exist between what is put in the graves of adults and of sub-adults.

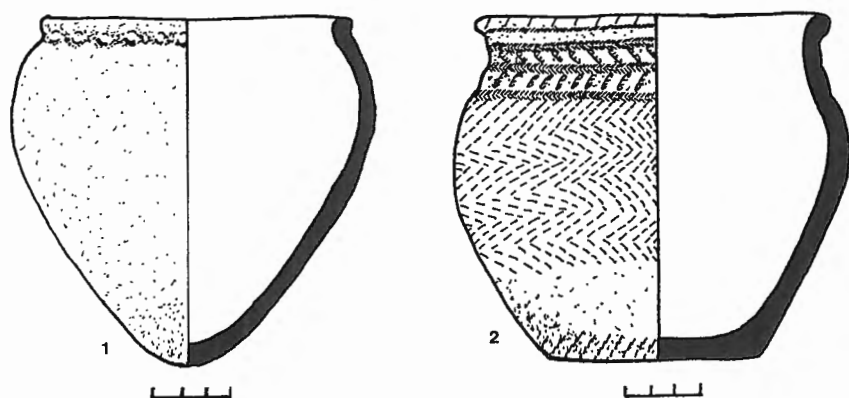


Fig. 1: Steppe Pottery: 1) Yamnaya, 2) Catacomb.

Two notes of caution need to be made about the inhabitants of the graves. First, most Yamnaya and Catacomb graves contain no grave goods, and we are, therefore not dealing with the lowest segments of society or, perhaps, even the ordinary. Second, and particularly important here, while there is no difficulty in determining that a skeleton is an infant, a child or even a young adolescent, the task becomes more speculative at the upper reaches of adolescence. This situation is further complicated by our not knowing exactly when an adolescent reached adulthood in these particular societies. Was it an arbitrary age such as twenty-one, eighteen, sixteen, thirteen or when

² There are about thirty vessels in the Volgograd collection that are from the Poltavka period. Because of their similarity to Catacomb vessels in both make up and chronology, I have included them in this paper under Catacomb pottery.

the person had physically reached puberty or passed some sort of rite of passage?³ This is a problem that needs further study, and one that I have alluded to elsewhere (Jones-Bley 1994). For the time being, one can suggest that adulthood is characterized on the Volga-Don steppe by the presence of weapons in the grave. However, because only a small percentage of adult graves contain weapons,⁴ we are still left with a great amount of ambiguity.

In the Volgograd collection there are 225 graves with a total of 288 ceramic vessels. The Yamnaya vessels are typed early, middle, late according to Merpert (1974), and the Catacomb are divided into nine categories based on the typology set down by Bratchenko (1976); see Jones-Bley (forthcoming) for the full breakdown of vessel types. There is only one type of Yamnaya vessel, the pot, while the Catacomb vessels have four major categories: pots, braziers, bowls (tureens) and censers. A pot is the most ordinary vessel while a brazier is defined as either the bottom or side wall of a large pot. The brazier usually has evidence of burning inside — although there is no report of the substance that was burned. A bowl is a vessel with a very wide rim but the height measures only about half the diameter of the rim. A censer is a special vessel which usually stands on three or four legs that are fused together and most often has a small inner compartment. The larger compartment of the censers usually has evidence of burning. These are always considered ritual vessels. A small amount of pottery was imported from the Caucasus; otherwise, all appears to be locally made. We are here looking only at pots as they are the largest group and provide the best basis for comparison both in size and decoration.

The vessels we will look at come from graves that contained single age groups — **infants** (up to two years old), **children** (approximately two to eleven), **adolescents** (approximately eleven to physically adult) and **adults**. Graves that contained skeletons from

³ Huld (in press) looks at literary sources that point to an Indo-European puberty rite in which boys are formally admitted to adult society upon the receipt of a variety of social attributes, among which weapons usually appear. I am grateful to Dr. Huld for allowing me access to this work prior to its publication and for our numerous discussions of this subject which have influenced many of my ideas.

⁴ Weapon is here used as a convenient but misleading term; it is understood that most “weapons” could just as easily be used only as tools. (For a discussion of terms for weapons see Huld 1993).

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more than one group are not included here. If there was a question in regard to age, e.g. an infant possibly a child, the older group has been chosen. Also if the question of an adolescent's status as male or female is considered, the more specific designation (here simply adult) was chosen in the belief that if speculation of gender was given by the excavator, the skeleton was that of a teen in the upper range and should probably be considered an adult.

Only the rim and height measurements were used as a guide to size. Vessels that did not have measurements for both rim and height were not included. These numbers include all measurable pots for both Yamnaya and Catacomb graves that came from single-age graves. Vessels from embankments and graves where no age level could be determined were not included in these calculations nor was the one antique vessel⁵ in this collection. Within these parameters, there are 150 vessels whose measurements were used. The size range can be seen in Tables 1a and 1b.

Table 1a
Overall Vessel Size (in cm.) — Yamnaya (26 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	24.00	24.00
smallest	6.00	7.60
average	12.03	12.95
median	11.40	12.40

Table 1b
Overall Vessel Size (in cm.) — Catacomb (126 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	30.00	41.00
smallest	6.50	7.00
average	13.65	14.43
median	13.20	13.40

⁵ This Catacomb vessel was found in a Srubnaya (later Bronze Age) grave along with four Srubnaya vessels.

The decoration also has a range. There are seventeen basic design elements for Yamnaya vessels (no decoration is counted as an element) and eleven design techniques which are the methods of executing the design elements (Table 2). Elements found on Yamnaya pottery are illustrated in Figure 2.

Table 2
Yamnaya Design Elements and Design Techniques

<i>Design Elements</i>	<i>Infants</i>	<i>Children</i>	<i>Adolescents</i>	<i>Adults</i>
1. horizontal rows	x	x	x	x
2. vertical rows	x		x	x
3. inclined rows	x	x		
4. herringbone	x	x	x	
5. concentric circles	x			x
6. hanging triangles	x			x
7. o-points	x	x		x
8. pearl		x		x
9. chevron	x	x		x
10. diagonal lines		x		x
11. vertical lines		x		
12. filled triangles			x	
13. wavy lines		x		x
14. step comb			x	
15. lozenge				x
16. towel				x
17. no decoration	x			
<i>Design Techniques</i>	<i>Infants</i>	<i>Children</i>	<i>Adolescents</i>	<i>Adults</i>
1. single cord	x	x	x	x
2. straight incisions	x	x		x
3. o-point incision	x	x		x
4. channel	x			x
5. V incisions	x			
6. small toothed stamp	x	x	x	x
7. large t'ed. stamp				x
8. inclined t'ed. stamp				x
9. finger pinches				x
10. fingernail imprints				x
11. triple cord				x

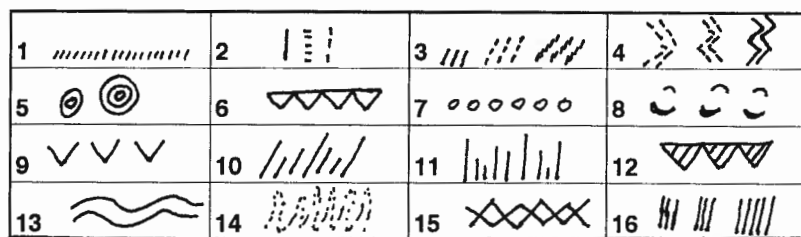


Fig. 2: Yamnaya Design Elements

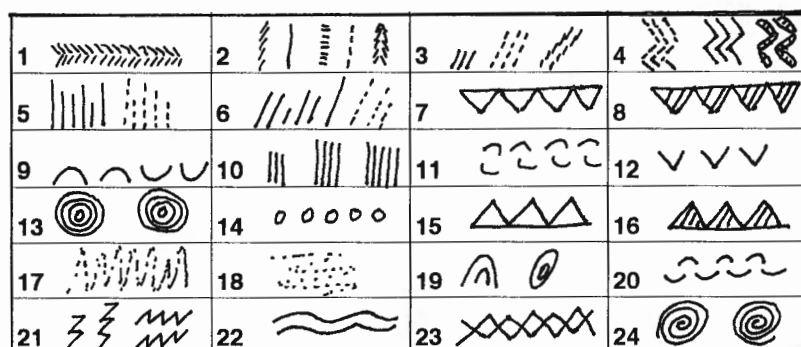


Fig. 3: Catacomb Design Elements

For Catacomb there are twenty-five design elements (lack of decoration should also be considered a design element) and twenty-three design techniques (Table 3). The twenty-five Catacomb design elements are illustrated in Figure 3. Some elements such as the herringbone design element is quite common. Most frequently the herringbone is done with a toothed stamp, but it was also accomplished with a small ovoid "larva" stamp or stick incisions. These techniques create a varied appearance in the basic herringbone pattern. Some elements are often located on a certain area on the vessel. Again taking the herringbone as our example, it is most frequently found on the body of the vessel but at times will be found also on the neck.

The Yamnaya motifs are less varied than the Catacomb and when the decoration covers the entire Yamnaya vessel, the motif is generally

Table 3a
Catacomb Design Elements

<i>Design Elements</i>	<i>Infants</i>	<i>Children</i>	<i>Adolescents</i>	<i>Adults</i>
1. horizontal rows	x	x	x	x
2. vertical rows		x	x	x
3. inclined rows	x	x	x	x
4. herringbone	x	x	x	x
5. vertical lines			x	x
6. diagonal lines	x	x	x	x
7. hanging triangles	x	x		x
8. filled hanging trigls.		x	x	x
9. semi-circles	x	x		x
10. towel	x	x		
11. finger imprint	x			
12. chevrons	x		x	x
13. concentric circles		x		
14. o circles		x		x
15. supra trigls.		x	x	x
16. filled supra trigls.				x
17. step comb		x		x
18. lanes		x		
19. concentric ovals		x		
20. scallop			x	x
21. zigzag				x
22. wavy lines				x
23. lozenge				x
24. spiral circles				x
25. no decoration	x	x	x	x

simple repetition of one or two elements, e.g., horizontal rows or herringbone. While this is often the case with Catacomb, more vessels have varied designs on the body.

Cord impressions are far and away the most prevalent design technique. Moreover, there are several kinds of cord — single, double, triple, twisted, braided and what is called “imitation cord,” which is accomplished with a toothed stamp. Small and large toothed stamps were also used frequently, particularly for the herringbone pattern. These design techniques were employed on vessels for both adult and sub-adults, and there doesn’t seem to be a technique limited

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to one age group, but as we will see, pots for infants have far fewer design techniques. There are a few examples of techniques that seem to be unique to an age group (e.g. two-toothed stamp), but this is usually because the technique appears only on a single pot.

Table 3b
Catacomb Design Techniques

<i>Design Techniques</i>	<i>Infants</i>	<i>Children</i>	<i>Adolescents</i>	<i>Adults</i>
1. single cord	x	x	x	x
2. double cord			x	x
3. triple cord	x	x		x
4. braided cord			x	x
5. twisted cord	x	x		x
6. imitation cord	x	x		x
7. incisions	x	x	x	x
8. stick point incisions	x	x	x	
9. sm. toothed stamp	x	x	x	x
10. lg. toothed stamp	x	x	x	x
11. semi-circle stamp		x		
12. oval impressions	x			
13. O-point large	x			x
14. o-point small	x			x
15. finger pinches	x			x
16. channel		x		
17. fingernail imprints		x		x
18. larva stamp		x		x
19. round stick		x		x
20. V incisions				x
21. three-toothed stamp				x
22. two-toothed stamp				x
23. modeling	x			

Infant graves

Only pots and braziers were found in graves which contained infants only. Three sub-groups of pots include jugs and cups, with one handle and amphorae with two are also in infant graves. Infants frequently received grave goods that were out of the ordinary. At Pevromaĭskii I kurgan-13, grave-5 an amphora was deposited along with several bronze beads and a temple pendant, fishing line weight

and a piece of realgar, which makes this grave exceptional. Two cups were found at Tsatsa k-1, g-2, along with two pots, a ram and a horse tooth, chalk and ochre, in a grave that contained two infants, one to two years old (Shilov 1985). Because of the near perfect duality of the grave goods, I have suggested these two infants of similar age may have been twins (Jones-Bley 1994:36). Twins are always exceptional, and later Indo-European cultures in India, Greece and the Baltic had twins as part of their pantheons (see Ward 1968).

Nine of the nineteen graves that contained infants only date to the Yamnaya period, and in them were a total of ten vessels. Ten of the 105 graves that date to the Catacomb period are infants. There were eleven infants in these graves and thirteen vessels. The size information can be seen in Table 4.

Table 4a

Vessel size (in cm.) in Infant Graves — Yamnaya (10 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	13.00	15.80
smallest	7.00	7.00
average	10.16	11.60
median	10.25	10.00

Table 4b

Vessel size (in cm.) in Infant Graves — Catacomb (13 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	14.00	16.00
smallest	6.50	7.00
average	10.54	11.59
median	11.00	11.75

From the infant pottery of the Yamnaya period there are eight design elements and six design techniques (Table 2 and Fig. 2). From the Catacomb period there are ten design elements and thirteen design techniques (Table 3 and Fig. 3).

Child graves

There are twenty-four graves that held children only; four Yamnaya graves contained four children and five pots, and twenty-one

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Catacomb graves held twenty-four children and twenty-six vessels. These graves contained the full array of ceramic vessels. Although most graves held only one vessel or one per child, one grave contained three children and three pots, one of unusual shape and decoration, as well as a brazier. In several graves multiple vessels had been placed with only one child; Glazunovskaya k-11, g-1, (Mamontov 1981) held one child with a pot, censer and a brazier and another grave contained only one child and three pots. Two graves contained a pot and a bowl, another a pot and a censer. In one of the graves with a pot and bowl, a rare silver pendant was found; the bowl also had a rare basal motif. The size information pertaining to children's graves can be seen in Table 5.

Table 5a
Vessel size (in cm.) in Child Graves — Yamnaya (5 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	15.20	15.20
smallest	8.00	12.00
average	12.45	13.58
median	13.30	14.00

Table 5b
Vessel size (in cm.) in Child Graves — Catacomb (26 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	16.20	15.80
smallest	8.00	5.60
average	11.90	11.35
median	11.75	11.40

From the Yamnaya period, decoration of children's pottery consists of four design elements and four design techniques. There is one new design element, wavy lines, but there are no vertical lines. There are no new design techniques (see Table 2 and Fig. 2).

From the Catacomb period, sixteen design elements and thirteen design techniques were used on pottery from children's graves. There are several new design elements: diagonal lines, filled hanging triangles, supra triangles, circles, concentric circles, concentric ovals, step comb and lanes. "Step comb" is an uneven vertical zigzag while

"lanes" consist of horizontal zigzags but the lines are not necessarily parallel as they generally are in the herringbone pattern. The new techniques are fingernail impressions, semi-circle stamp, channeling, larva stamp and round stick impressions (see Table 3 and Fig. 3).

The vessels from the child graves show a somewhat greater variety and elaboration in decoration than those from the infant graves, but they include most of those elements found in the infant graves.

One might speculate that the bowl, which makes its first appearance in this collection in children's graves, serves as a post infancy marker. However, its absence in infant graves may also be an artifact of the small sample.

Adolescent graves

Adolescent graves have only pots, braziers and bowls. There were two Yamnaya graves and twelve Catacomb graves.

The size information of the sixteen adolescent vessels can be seen in Table 6.

Table 6a

Vessel size (in cm.) in Adolescent Graves — Yamnaya (3 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	24.00	24.00
smallest	12.50	13.00
average	16.67	17.33
median	13.50	15.00

Table 6b

Vessel size (in cm.) in Adolescent Graves — Catacomb (13 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	15.50	18.40
smallest	9.40	8.00
average	12.23	11.87
median	12.00	12.60

The largest Yamnaya adolescent vessel is of some interest as it is only half a vessel, but because the rim and height dimensions were available, it is included in Table 6a. An additional peculiarity is that this vessel, along with another Yamnaya vessel (both clearly showing

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the typical pointy bottoms characteristic of Yamnaya pottery) was found in a Catacomb niche grave and the deceased lay in a Catacomb position. Because these are technically Yamnaya vessels they are listed under Yamnaya. Two adolescent graves one from a Yamnaya grave and one from a Catacomb grave each held two vessels

From the Yamnaya period there are five design elements and two design techniques employed on adolescent pottery. Two of the design elements are new: filled hanging triangles and step comb, but there are no new techniques (Table 2 and Fig. 2).

From the Catacomb period there are eleven design elements and seven design techniques found on adolescent pottery. Only the scallop design element is new, and braided cord makes its first appearance in adolescent graves (Table 3 and Fig. 3).

Adult graves

Interestingly there are fewer adult (only nine) than sub-adult graves (fifteen) in the Yamnaya period.

In the Catacomb period adults have the full array of vessels. There are seventy-two vessels that belonged solely to adults in the sixty-two Catacomb graves which held sixty-five adults.

Table 7a

Vessel size (in cm.) in Adult Graves — Yamnaya (8 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	20.00	23.50
smallest	6.00	7.50
average	12.41	13.13
median	11.70	12.70

Table 7b

Vessel size (in cm.) in Adult Graves — Catacomb (72 vessels)

<i>Measurement</i>	<i>Rim</i>	<i>Height</i>
largest	30.00	41.00
smallest	6.80	8.80
average	15.64	16.46
median	15.00	15.30

From the Yamnaya period, we have eleven design elements and ten design techniques on adult pottery. Three of the design elements, the lozenge, pearl and towel, are new. The "pearl" could be considered a variation on the o-point in that the impression is made from the inside but does not penetrate the vessel completely but creates a raised "pearl." The "towel" is a series of three to five straight, usually vertical, parallel lines. Five techniques — large-toothed stamp, triple cord, finger pinches, inclined-tooth stamp, and fingernail impressions — are new (Table 2 and Fig. 2).

Catacomb adult pottery has a much larger repertoire of both elements and techniques — twenty elements and eighteen techniques (Table 3 and Fig. 3).

By comparing the design elements and design techniques (Table 8), we can see that there is a dramatic leap in the number of design techniques from sub-adult to adult in the Yamnaya category. This is particularly clear when comparing infants with ten pots and six design techniques and adults with only eight pots but ten design techniques. This contrasts with the Catacomb group where infants have twelve pots and thirteen design techniques, and adults have seventy-two pots and only nineteen design techniques. One possible explanation for this is that there are a limited number of techniques.

Table 8
Comparison of Design Elements and Design Techniques with Age
Design Elements

<i>Age</i>	<i>Yamnaya</i>	<i>Catacomb</i>
Infant	9	10
Child	9	16
Adolescent	5	11
Adult	11	20

Design Techniques

<i>Age</i>	<i>Yamnaya</i>	<i>Catacomb</i>
Infant	6	13
Child	4	13
Adolescent	2	8
Adult	10	19

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There are a number of extremely well made pots but two are exquisite — one from Ivanovka and one from Oreshkin. The Ivanovka vessel has a beautifully executed deep toothed stamp pattern over the entire body (Jones-Bley forthcoming). The Oreshkin vessel is also completely decorated with, for the Volgograd area, a unique “sun” design on the body with protuberance (D’yachenko 1992).

Summary

The size of vessels can be looked at objectively, and we can see in Table 9a and 9b that there is in Catacomb pottery a gradual increase in the size of pots from infant to adult burials. On average, pots in adult graves are 3 to 4 cm. larger than those placed in the graves of infants, but this is not true for Yamnaya vessels. The greatest increase occurs in the Catacomb period between adolescents and adults.

Table 9a
Comparison of Pot Size (in cm.) and Age Group
Yamnaya

<i>Age</i>	<i>Average (rim/height)</i>	<i>Mean (rim/height)</i>
Infants	10.16/11.60	10.25/10.00
Children	12.45/13.58	13.30/14.00
Adolescents	16.67/17.33	13.50/15.00
Adults	12.41/13.13	11.70/12.70

Table 9b
Comparison of Pot Size (in cm.) and Age Group
Catacomb

<i>Age</i>	<i>Average (rim/height)</i>	<i>Mean (rim/height)</i>
Infants	10.54/11.59	11.00/11.75
Children	11.90/11.35	11.75/11.40
Adolescents	11.97/12.40	11.50/12.60
Adults	15.65/16.46	15.00/15.30

While a rather subjective observation, the vessels from the infant graves are less elaborately decorated particularly in the Yamnaya period. They are generally simple rows. The decorative motifs are made up of design elements, and we can see from Table 10 the complexity of motifs grows with advancing age. However, in the

overall quality of vessel manufacture a small Yamnaya vessel from an infant's grave is one of the most outstanding. It is well executed in both manufacture and care of design, although extremely simple, consisting of horizontal imitation cord rows which circle the entire vessel. The bottom of the vessel continues the design ending in the center of the bottom with a circle surrounding interior parallel lines.

However, often the number of design elements is deceptive. The decoration on the Ivanovka pot, mentioned above, has two, possibly three, elements (depending on how one looks at it), but this pot presents an extremely attractive and complex overall design. A vessel from Oreshkin, however, has six elements, five of which are on the neck. Here the pot has an initially simple appearance but further inspection shows its complexity.

Table 10a
Comparison of Number of Design Elements and Age in Percentages
Yamnaya

<i>Age</i>	<i>n/d</i>	1	2	3	4	5	6
Infants	10.00	30.00	20.00	0	0	0	0
Children	0	10.00	60.00	40.00	0	0	0
Adolescents	0	33.33	33.33	33.33	0	0	0
Adults	0	37.50	12.50	37.50	37.50	0	0

Table 10b
Comparison of Number of Design Elements and Age in Percentages
Catacomb

<i>Age</i>	<i>n/d</i>	1	2	3	4	5	6
Infants	15.38	46.15	7.69	7.69	15.38	7.69	2.78
Children	15.38	15.38	38.46	15.38	0	7.69	3.85
Adolescents	7.69	23.07	61.54	7.69	0	0	0
Adults	9.72	16.67	29.16	19.44	13.89	8.33	2.78

An obvious conclusion as to the smaller size for sub-adults might be that smaller pots go with smaller people. This, however ignores cases such as Pervomaĭskiĭ VII k-36, g-11, where a large adult male was accompanied by a very small, (8 cm high) vessel. Nor does it provide a ready explanation for the increased elaboration of the vessels

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with age as there is no correlation between size of vessel and design complexity.

Overall more effort seems to have been put into the adult vessels, but the greatest difference is between the infant and child categories. Keeping this in mind, we seem to have two possible thresholds: one at the end of infancy when we might say the infant has entered "humanity" and the other between the adolescent and the adult. While this is not seen in the pottery, it can be seen in regard to metal objects that are placed in the grave. Adolescents appear to be given tools, e.g. awls, but not weapons. Moreover, a less rigid line might be drawn between the child and the adolescent. Again, this is not clear in the pottery, although perhaps it is seen in the reduced number of design elements and techniques. However, this line can be seen in the metal objects where children (and infants) receive ornaments but not tools (Jones-Bley 1994).

When taken alone the differences in pot size and motif elaboration may not appear to have great significance. However, when combined with comparisons of other items found in the grave, it does appear that there is a difference in the goods placed in the grave of different age groups.

Conclusions

While a great deal more research is required in this area, a few things seem to be evident. The first and most important is that sub-adults, or at least some sub-adults, were valued members of these societies. There is enough evidence to show that the death of a child was an occasion for overt and lasting expressions of grief much as what was expressed by the death of an adult. While this may seem at first glance to be obvious, it is in marked contrast to the way the remains of children were dealt with through much of the Neolithic (Jones-Bley 1994:333). Nor were these juveniles buried in cemeteries separate from adults in contrast to some later societies such as Roman Carthage (Norman 1995:18). Moreover, children were, in Yamnaya and Catacomb societies, included in the reverence of individual ancestors as manifested by individual burial. Again, this is contrasted by what can be thought of as communal ancestors without identification of individuals as is seen particularly in megalithic burials of Western Europe during the Neolithic. The burial of these Yamnaya and Catacomb children fall completely within the formula we know for Indo-European burial. They were being honored as individuals and

were buried in the same manner as adults (Jones-Bley 1990 and in press). This situation defies the standard opinion of a "patriarchal" society dominated by adult males and placing little emphasis on women and children.

As to differentiation between adults and sub-adults, this is somewhat less evident although I believe there are some, although perhaps small, differences which we can see in the size and decoration of vessels. It is most obvious here with the Yamnaya vessels. Adults account for only about a third of the total number of Yamnaya vessels (eight out of twenty-six) yet they have eleven design elements; infants have ten vessels but only nine elements. Children also have nine elements but only five vessels and adolescents five elements with only three vessels. Also striking is the relative fewer design elements among adolescents. This might be explained simply in terms of the number of vessels in the age group or in the number of years of the age group. There are eight years in the child category, (two to ten years old), and only two years in the infant category. The number of years in the adolescent category is unknown but surely more than the two of infancy, less than the adult or quite likely the eight years of childhood.

Another possibility is that the infants and children were the responsibility of adults and therefore were given goods by adults. Adolescents, however, may have been considered more independent and less the responsibility of adults which might be reflected in fewer and less elaborate grave goods. Put another way, the categories of infant, child, adolescent and adult could be reinterpreted as pre-child, child, pre-adult and adult. This interpretation suggests that the steppe peoples viewed adolescence as the line of demarcation between the dependency of childhood and the independence status of adulthood. This is an area that requires considerably more investigation than space allows here. Nevertheless, one should keep in mind the Indo-European custom of fosterage where the foster family was usually of lower status than the child's parents. If the child were to die during the time of fosterage the foster family might well want to placate the higher status parents and thus bestow elaborate goods on the dead child. Linguistically, the Latin verb *adulesco*, from which our term *adolescent* is derived as a substantized present-active participle, comes from the IE root **Hal-* 'to grow', 'to nourish', 'to foster'.

Furthermore when we note that the data gathered here comes only from graves with ceramics and remember that the great majority of graves in these societies lack not only ceramics but any grave goods,

we can see that there was a differentiation in society. These people were not egalitarian in death, and if death reflects the living society, already in the third millennium BC these putative early Indo-European people had a stratified and undoubtedly complex society.

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Linguistics

Meillet's Northwest Indo-European Revisited

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In the second edition of his *Les dialectes indoeuropéens* (1922), Antoine Meillet retained his 1908 proposal that a Northwest Group which consisted of five recognized subgroups — Italic, Celtic, Germanic, Baltic and Slavic — could be recognized within Indo-European on the basis of thirty-eight shared lexical items. A number of factors that went unnoticed in the original proposal weaken Meillet's thesis. First, Meillet's Northwest was identified exclusively by lexical similarities, hence the chapter title "Le vocabulaire du nordouest." Linguists have long questioned the value of lexicon as a sign of language relationships, and Meillet did not deeply examine the possibility and its implications that the lexical uniqueness he observed might have represented a common borrowing among divergent languages from a unified substratum or that the linguistic grouping which he defined might have indicated an area of convergent evolution in which shared technological and cultural innovations were expressed by shared linguistic innovations. Moreover, since Meillet's time, both Italo-Celtic and Balto-Slavic as larger linguistic units have been repeatedly questioned and at times rejected; some, notably members of the Italian neolinguistic school, have even rejected the unity of Italic and Baltic as discrete subgroups. Additionally, Meillet failed to correlate his purely lexical grouping with other morphological and phonological criteria that had produced alternative subgroupings within Indo-European. In light of these problems and because Meillet inevitably lacked the greater knowledge which we now possess of the then newly discovered Tocharian and Hittite by which we are able to compare these groups more comprehensively with his Northwest

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languages, it is time to reevaluate the evidence for the Northwest Group.

Meillet defined his Northwest Group in terms of some thirty-eight words within six broad semantic categories: agricultural terms, names of birds and insects, names of trees, technical terms, words for social relationships and a miscellaneous group which contains many words relating to human beings and climate. Because of the ease with which single items can be borrowed, lexical evidence is widely recognized as the least reliable witness for language relationships. The term *football* is, after all, widely attested in its various meanings throughout the world, but few of the languages in which it occurs are closely or even demonstrably related to English. Indeed, Meillet failed to examine the possibility that his "vocabulary of the Northwest" might contain substratal borrowings, although the very nature of his semantic headings showed that the ecology and social patterning were the dominant themes, yet these are widely recognized as areas in which loan words are particularly common when a people find themselves in a new environment or confront an alien culture, a point which is demonstrated by the large number of Amerindian loans having to do with flora (e.g. *catalpa*) and fauna (e.g. *skunk*) as well as social circumstances (e.g. *wampum* and *tipi*) in American English. The possibility is especially worth considering when it is observed that the words for 'apple', 'oats' and some of the terms for 'alder' show phonological features of open sonority that indicate non-Indo-European sources (Huld 1991b). The words identified by Meillet and some additional culture words within Northwestern languages, I have isolated two strata of non-Indo-European loans found in the Northwest. These nineteen words include a number of flora — 'hazel', 'willow', 'rye', 'hellebore', 'cannabis' and 'woad' — and fauna — 'pack-horse', 'cat', 'pig' and 'salmon' — clothing — 'shirt' and 'cloak' — and tool terms 'hoe', 'axe', 'arrow' and 'plow' — as well as terms relating to construction and metallurgy — 'dwelling', 'container' and 'silver'. While the geographical agreement between Meillet's collection and my own indicates the reality of the Northwest as a language area, it raises the grave question of whether the Northwest constituted a well defined genetic sub-unit within Indo-European or was merely a geographically induced area of shared cultural innovation or common substratal influence.

To answer this question, we must first look more closely at the constituents of the Northwest. For Meillet, the Northwest consisted of

three subgroups, two of which were bipartite: Italo-Celtic, Germanic and Balto-Slavic. Of these, only Germanic has remained unassailed by modern reanalysis and revisions. The majority opinion, best expressed by Calvert Watkins' presentation at the Los Angeles Indo-European dialect conference (1966), now rejects a definite Italo-Celtic unity, though few would deny an early closeness between the groups. Nevertheless, the most striking phonological criterion, the regressive assimilation of initial **p* to **k^w* of the following syllable onset, as has been pointed out many times, affects only three or four words: 'cook', 'five' and 'oak' (one might include Lat. *cunctus* and Hitt. *pankuš* 'total' if the derivation of the former from PIE **ponk^w-to-* and the latter from **ponk^w-s* is correct). The Latin word for 'near' *prope* undoubtedly akin to *proximus* indicates a contradictory but related development. Watkins also reviewed Meillet's other points of grammatical similarity — the treatment of the antevocalic syllabic liquids, the thematic genitive in **-i*, the superlative in **-smmo-* and the nasal augmentation of the abstract *ti*-nominals, — and found them inadequate (1966), although Cowgill later concluded (1970) that the divergences, especially those in the superlatives, might equally be viewed as later developments deviating from an original proto-type and that Italic and Celtic thereby constituted "a 'drowned' or 'prematurely disrupted' sub-group of Indo-European" (1970:114). The lexical evidence of Meillet's eight common words is similarly unimpressive.

However, if the question of Italo-Celtic unity in the traditional sense of a proto-language possessing a single reconstructible grammar is untenable, the question of the composition of both Italic and Celtic themselves is more interesting. Lepontic, clearly akin to Celtic, retains IE **p* and at least graphically uses the same letter for the reflex of **k^w*.² This fact was taken by Whatmough (1933:69) among others to mean that Lepontic was not truly Celtic, but the underlying retention of a segment reflecting PIE **p* in Celtic can be demonstrated on other grounds, and that grammar of 'Celtic' becomes identical (at least in

² As Hamp (1958:217) noted, it is clear that Proto-Celtic did not simply lose PIE **p*, but transformed it into a structural segment, **φ*, which was retained for some time in limited environments such as after **s* and before **i*. How such a Proto-Celtic sound would have been represented is unclear, and it is possible that the Lepontic graph < p > ambiguously represented both [p], the reflex of PIE **k^w*, and [φ], the reflex of PIE **p*.

terms of phonology) with the grammar that generates both Lepontic and the traditional Celtic languages; hence Lepontic can be considered a Celtic language as Lejeune has done (1971).

The composition of Italic is a more contentious matter. Although Oscan-Umbrian shows deep lexical divisions from Latino-Faliscan, the common development of the initial voiced aspirates to voiceless spirants, the realignment of initial **dh* to [f] through **[θ]*, the common development of the syllabic liquids and the evolution of the four verb classes and the five nominal classes justify the belief in a common Italic subgroup.³ In 1949, Beeler demonstrated that Venetic, hitherto regarded with little justification as an Illyrian language, was Italic in its phonology and most of its identifiable morphology. The notion that Venetic occupies a special place outside of Italic is a superstition borne of one man, Hans Krahe, who had invested a career in Illyrian studies. Beeler's discovery (already hinted at by R. S. Conway who had pointed out as early as 1933 that Venetic possessed the phone [f] <vh> as the reflex of PIE **bh* and of some cases of **dh*, a situation not found outside of Italic languages and never in Illyrian remains) left Krahe scrambling for make-shift hypotheses of unique relationships to conceal his original error. Though Beeler's original conclusion, that Venetic was a member of the Latino-Faliscan sub-branch, is undoubtedly wrong, for the retention of labiovelars is just that, a retention and not a diagnostic innovation, the Italic affinities of Venetic are obvious. In all major features Venetic resembles either Latino-Faliscan or Oscan-Umbrian. Although Venetic escaped the later Italic change of **tl* to *kl*, there is no innovation that unites it with any non-Italic group other than the possible neutralization of final **m* to [n], and this, of course, is a commonplace neutralization of final nasals also seen in such divergent stocks as Celtic (Gaulish *lokan* 'bed'), Greek (*ζυγόν* 'yoke'), Hittite (*yugan* 'yoke') and Armenian (*tasn* 'ten'). In all other features, where Venetic diverges from Latino-Faliscan, it matches Oscan-Umbrian and may be regarded as Italic in the same sense that Lepontic is Celtic, that is, a conservative member of a family where later innovations become more prominent.⁴ In this view,

³ It is worth noting that while the change of PIE **g^w* to [b] is uniform in Celtic, in Italic it is confined to Oscan and Umbrian. If the development is coeval in both groups, the logical inference is that Italic was already sharply divided at a time when Celtic was still roughly uniform.

Proto-Italic then becomes tripartite and of much greater age than earlier scholars had assumed.⁵

Balto-Slavic represents another hybrid stock whose validity has been questioned. The case for original unity is advanced by a considerable number of shared lexical items, far greater than in Italo-Celtic but less than in Indo-Iranian, e.g. Lith. *galvą*, Russ. *golová* 'head' < PIE **galHueA₂*, are found; in addition there are shared derivations, e.g. the e-grade for 'earth' seen in Lith. *žemė* and Russ. *zemlya* < PIE **dhǵhem-jeA₂* against the o-grade seen in the root noun (Gk. *χθον-*, OInd. *kṣam-*, TA *tkam* and TB *kem*) and many other derivatives, e.g. OIr. *duine* 'human'. Nevertheless, many of these similarities are of a late date. The comparison between the Lithuanian definite adjective *basàsis* < **bāsas+jis* and OCS *bosyj* < PS **bosŭ+jŭ* show that at the time of creation, unlike Baltic, Slavic had already lost final **s*. Moreover, the presence of a definite adjectival declension is also attested in the Germanic "weak" adjectives, cf. OE *bara* 'the bare one' beside *bær* 'bare'.

While Baltic and Slavic are undoubtedly closer to each other than to any other groups, there are also to my mind very deep and early differences. One of these is the personal pronouns. Lith. *jūs* surely and *mēs* probably are identical with the old Indo-European nominatives **jūs-* and **mei-* preserved in Gothic *jūs* and *weis* and Indo-Iranian **yūš* and **vayám*. OCS *vy* and *my* (*ny* once) seem to reflect old obliques seen in Lat. *uos* and *nos* or Alb. *ju* (Huld 1979) and *na*. Since the use of the oblique for the nominative is characteristic of Celtic (cf. W *chwi* and *ni*) and Greek (Lesb. *ὑμεες* and *ἄμεες*) as well,

⁴ It is noteworthy that the preservation of final **m* in Lepontic, at least in *uinom* and *našom*, which may be loans, but especially *pruiam*, was also used by Whatmough to argue against the Celtic affinities of Lepontic (1933:69). As in the case of Venetic, the sound change is too commonplace to be treated as a major diagnostic. More striking is the development of PIE **g^{wh}* in the toponym *Bormiae* 'hot springs'; nevertheless, Lepontic can be regarded as derived from essentially the same proto-type as the Celtic languages.

⁵ This same point about the greater time-depth of Italic without regard to the membership of Venetic was made by Sihler, who noted the "internal differentiation is without question extreme by comparison to the more or less contemporaneous Greek" (1995:14). Logically, then, the breakup of Italic must have occurred well before 2000 BC, and of necessity outside of Italy.

this innovation must have spread early (before 1500 BC) at a time when Baltic and Slavic were already divided. Vaillant's notion that a Balto-Slavic unity was disrupted by Germanic expansions (1950) is then clearly incorrect as Senn pointed out in 1966 (140). In light of the equally great division between Old Prussian (with the old thematic genitive singular) on the one hand and Latvian and Lithuanian (where, as in Slavic, the thematic ablative has replaced it) on the other, the unanswered question is whether West Baltic is a separate grouping and all three — West Baltic, East Baltic and Slavic — are members of a Macro-Baltic group that divided very early, but remained in close contact for a substantial period of time.

Two of the chief features of the Macro-Baltic languages are the development of the accentual paradigms and the lengthening of vowels often before original voiced stops. The first of these developments is shared by Germanic and second by Albanian, and it is to these groups that we now turn.

Germanic has long been known to share features with Baltic and Slavic. The most notable of these is the use of *m* rather than *bh* for the dative (and in part instrumental and locative) plurals as in OE *wulfum*, Lith. *vilkams* and OCS *vlŭkomŭ*. It was on account of this feature that Schleicher, the first dialectologist of Proto-Indo-European, grouped these three together (1871). In addition, Germanic probably shared the development of mobile accentual paradigms with Baltic and Slavic. This feature can be gleaned from cases in which Verner's law operates in one branch, but not in others. Thus, the consonantism seen in ON *heri*, *hera* and OE *hara*, *haran* 'hare' must reflect a desinence accented nominative or genitive singular, PG **xasōn*, **xasánaz*, while the consonantism of OS *hasa* and OHG *haso* must be analogically leveled from the root accent of the nominative plural **xáseniz*. This is, of course, exactly the same pattern of accent mobility seen in type-3 *n*-stems in Lithuanian *akmuð*, *akmeñs* but *ákmenys* 'stone'. Similarly, ON *hestr* 'stallion' reflects Proto-Germanic root-accented nominative singular **xánxistaz*, but OE *henzest(as)* and OHG *hengist(a)* reflect analogical developments of the desinence-accented plurals, PG **xanzistōz*. Again the paradigm is matched by Balto-Slavic, e.g. Lith. *qžuolas* 'oak' and *qžuolai* < **Hánghōlos*, **Hanghōloi*. The variation of OE *glæs* 'glass' and *glær* 'amber' < PG **glaza-* is of the same order as the fourth thematic class in Lithuanian *nāmas* 'house' but plural *namai*. The Germanic data, sparse as they are, indicate that shared mobile accentual paradigms cannot be regarded as a unique

Proto-Balto-Slavic innovation, but rather a circum-Baltic areal innovation common to Baltic, Slavic and Germanic with slightly differing developments. The fact that Germanic does not assibilate original Indo-European palatals does not effect this argument in the least. Schleicher's association of Germanic with Balto-Slavic is an early acknowledgement that palatalization is a phonological commonplace. It was the great mistake of Schmidt and the Wave Theorists to become enamored with the Satəm-Centum isogloss and consequently overvalue it to the detriment of identifying isoglosses that cut across this innovation.

Palatalization is the rule in Indo-Iranian, although certain features such as the Indic development of **ks* to *ks* as opposed to Iranian *š* (as in *akši* and *aši* 'axle') show, even without considering the Nuristani affricates, that the Indo-Iranian development was not to fricatives exclusively. In Baltic and Slavic the development to sibilants is usual, but stops occur as free variants, e.g. Lith. *akmuõ* 'stone' but Lith. *ašmenys* 'edge of an axe'. Attempts to account for this variation by appealing to conditioned depalatalization before resonants are useless; in both these words the palatal stop stood before a consonantal nasal. What we have is obviously free variation of affricated or assibilated and stop reflexes of the Proto-Indo-European palatals in these and other Baltic and Slavic words such as Russ. *slonit* and *klonit* 'leans' and OPrus. *peckus* and Lith. *pešu* 'cattle'.

Albanian also exhibits both velar and spirant reflexes of the Indo-European palatals, but here conditioning factors are in evidence. Before vocalic or syllabic elements, spirants occur (e.g. *thëri* 'nit' < **konid-eA₂*) and *drithë* 'barley' < PIE **gh₁rs-d*, before non-vocalic, non-syllabic elements, velars occur (e.g. *kmesë* 'pruning hook' < *Häkm(ō)ñ-tieA₂* from the stone sickle proto-type). Kortlandt's efforts to relate the Balto-Slavic and Albanian developments (1978, 1986) is thus unsound, for entirely different principles are at work. The Balto-Slavic divergences arise from free variation; those in Albanian have their origins in complementary distribution.

A similar disparity exists in the evolution of the accent systems. Albanian shows no recoverable traces of the mobile accent paradigms so well known in Baltic and Slavic and inferable for Proto-Germanic. The disparity of consonant development seen in cases like *gjarpër* 'snake' with accent on the initial syllable < PIE **sérpenos* (resulting in the voicing and occlusion of initial **s*) against the archaic plural *shtërpinj* 'vermin' with accent on the predesinental suffix < PIE

**serpénoi* (and the voiceless alveopalatal spirant reflex of PIE *s) or the difference in vocalism in *dēt* 'sea' < **dhéubhotos* and the plural *dēt* < **dheubhótoi* or *fyell* 'flute' < PIE **spógos* and plural *fej* < PIE **spogóloi* do not reflect morphological accentual paradigms of the northern languages but resemble the phonologically conditioned mobility of the accent in Latin and are a consequence of the mechanical application of the earlier Albanian recessive accent rule whereby the stress accent fell on the syllable immediately before the penultimate mora, thus on the antepenult if the final syllable was short and the penult if it was long (Huld 1985).

Where Albanian and Balto-Slavic do agree is in regard to the lengthening of original short vowels before voiced stops, Winter's Law. Although there are other causes of lengthening, one of which I shall examine in a moment, the automatic lengthening of Winter's Law is shared by Balto-Slavic and Albanian as in the Indo-European root **ped-* 'foot' (Lith. *pėdà* 'footprint', OCS *pěsī* and Alb. *poshë* 'beneath' < **pėdsi*. More importantly, there is even agreement in the cases in which expected lengthening fails to occur, e.g. the root **uod-* 'water' (Lett. *ūdens*, OCS *voda*, Alb. *ujë* < **ud-riom*.⁶ Albanian then should have been included in Meillet's Northwest even though it has only a few of the thirty-eight lexical items that defined the group.

Of Meillet's vocabulary, the root **seE-* in the meaning 'seed/sow' can no longer be regarded as purely western. The OIn. *sásya-* 'herb' answers to Welsh *haidd* and is clearly a reduplication of this root; it is unlikely that herbs are 'things thrown'; the original meaning of **seE-* was not then 'throw' as it developed in Indic tradition, but 'sow' as recorded elsewhere, and the same may be said of two other forms. The noun **porko-* 'piglet, farrow' has now been found in Khotanese Iranian *pasa* and thus cannot be regarded as exclusively western, nor can the use of **ǵrH-no-m* 'ripened' for grain in light of an alleged Pashto cognate, *zān-*. Although Alb. *halë* 'black pine' answers to **A₂elsno-* 'alder', the antecedent of Lat. *alnus* and Lith. *alksnis*, the presence of Hitt. ^{GIŠ}*alanza(n)-* 'alder' also removes this word from the list of Northwest innovations; moreover, Germanic and Slavic forms, e.g. OE *elor*, ON *qlr* and Czech *olsha* must be

⁶ Krzysztof Tomasz Witzak has suggested to me (pers. com.) that failures of Winter's Law are regulated by accent placement. This would imply that Winter's Law affected Albanian vowels before the evolution of the recessive accent law.

distinguished from this root, for they show open sonority akin to the “Macedonian” gloss $\alpha\lambda\iota\zeta\alpha\cdot \eta\lambda\epsilon\acute{\upsilon}\kappa\eta\tau\acute{\omega}\nu\delta\acute{\epsilon}\nu\delta\rho\omega\nu$ (the white [poplar] among trees) that link it with the pre-Indo-European substrate. Thus, we have in the Northwest, two separate lexemes, one Indo-European and the other pre-Indo-European, are attested for ‘alder’.

From Albanian, the word *bar* ‘grass’ certainly answers to the Northwest cereal words represented by Lat. *far*, OE *bær*, and OCS *brašino*, and it has been argued by Hamp (1960) that Alb. *grurë* (Gheg *grûn*) ‘grain’ is cognate with the Indo-European adjective ‘ripened’ which comes to mean ‘grain’ in the Northwest (Lat. *grānum*, OIr. *grán*, OE *corn*, OCS *zrūno*, but Lith. *žirnis* ‘pea’). Certainly Gustav Meyer’s contention that Alb. *grurë* is a Latin loan is unacceptable, but a derivation from **ghrēn-* ‘grind’ better suits Albanian developments. The vocalism of *ngrënë* ‘eaten’ < PIE **E₂en-g^wrŋ-no-* suggests that before nasals Brugmannian “long” sonorants developed simple a-vocalism as they did in other Albanian environments; furthermore, in light of the fact that *dhallë* ‘buttermilk’ and *drithë* ‘barley’ show the typical (inter)dental reflexes of Proto-Indo-European palatals before undoubted syllabic sonorants, the notion, demanded by Hamp’s etymology, that palatals are neutralized before syllabic sonorants seems clearly contradicted. The Northwest term ‘mildew’ is however seen in *musht*; the term for ‘yew’ is perhaps to be seen in *enjë* < **euniā* < **eiu-nā* < **Eei-ueA₂*. If Alb. *rreth* ‘wheel, hoop’ answers to PIE **rotA₂*, it would agree with the wheel words — Lat. *rota*, OS *rad*, OIr. *roth* and Lith. *rātas* — against the meaning ‘chariot’ in Indo-Iranian, but this last feature is probably a retention rather than a shared innovation of the Northwest. If *anë* ‘side’ is reconstructed as **HasneA₂*, the pre-Albanian antecedent could be a metathesis of **Hanse-* ‘handle’. PIE **treud-* ‘push, exert, threaten’ is matched by *tredh* ‘castrate’. Finally, Alb. *ledh* ‘furrow marking the end of a field; silt’ corresponds to OCS *lěda* ‘loam’ and could be a derivative of the same root that gives the ‘furrow’ words: Lat. *lira*, OHG *leisa*, Lith. *lỹsė*, and OCS *lěxa*.

There are however, specific points at which Albanian diverges from the Northwest. Like Italic, Albanian lacks clear evidence of the substrate word for ‘apple’ with its anomalous [b]-phone, **bol-*, and preserves the original Indo-European term in *mollë*, cognate with Lat. *mālum*, Gk. $\mu\acute{\eta}\lambda\omicron\nu$, and Hitt. *mahlan* ‘some kind of fruit’ as well as TA *malañ* ‘nose’.⁷ Like Oscan-Umbrian, Albanian lacks the

Northwest term 'earthling' as the usual designation for 'human being'. In Albanian *njeri* 'person', this term has been evolved from the older '(prominent) male'. As in Irish, the special Northwestern word for 'beard' perhaps based on 'bristle' **bhars-dho-* does not appear, and the word for 'chin', *mjekër*, also found in Lithuanian in the sense 'chin' is used for 'beard' as it is in Armenian and Indo-Iranian. The Albanian word for 'bean' *bathë* shows the same final consonant as Greek rather than the bilabial stop of Italic (Lat. *faba*) and Slavic (OCS *bobŭ*) or diphthong of Germanic **bauna-*. Lepontic *kozis* now supplies the Celtic evidence for Northwest 'guest', the most important word relating to social organization; I have shown elsewhere (1991a) that Alb. *huaj* like Gk. *ξένφος* is an adjective based on a lost n-stem noun 'apportioner' PIE **bhg-sēn-* and quite unrelated to Germanic **gasti*, Lat. *hostis* and OCS *gostŭ*. Thus, if we accept the reality of the Northwest, we must also envision both Italic and Albanian as departing from that region sometime earlier than say 2500 BC.

Despite these lexical divergences, there is much in phonological and morphological developments that indicates that Albanian at one time belonged to the Northwest group. The strongest evidence for this claim lies in the development of the syllabic liquids. All of the Northwest languages have high vocalism (either [i] or [u]) or reflexes of earlier high vocalism (Fig. 1, line 1). In the southcentral region — Greek, Armenian, Anatolian, and probably Phrygian — have a-colored, low-vocalism (Fig. 1, line 2), and in the east, Indo-Iranian and Tocharian originally possessed mid central vocalism, evidenced by the Sanskrit grammarians' referring to the vocalism of the syllabic *r* as "dim" (*samvṛta*) and the Tocharian reflex's appearing identical to those of PIE **e* but lacking the palatalization of a front vowel, that is the Tocharian antecedent, like Indo-Iranian, was something like [ə] (Fig. 1, line 3). The presence of pre-Greek loans words, e.g. *πύργος* 'wall' < PIE **bhṛǵhos* (cf. OE *burz* 'fort') and *τύμβος* 'tomb' < **dhṛmbho-* (cf. Gk. *τάφος*), indicates that pre-Greek also belonged to this group and confirms the early date of its dissolution.

⁷ The Tocharian witness is especially important for *malañ* 'nose' can be derived by metonymy from 'cheek', a semantic development that is quite plausible from an original 'apple'.



Fig. 1: Provisional Dialectal Map of Indo-European syllabic resonants: 1) $\bar{R} = i/u\bar{R}$; 2) $\bar{R} = a\bar{R}$; 3) $\bar{R} = ə\bar{R}$

By 1500 BC Mycenaean, Indic and Hittite records attest some of the changes that had gone into the break-up of the older Northwest unity into eastern and western polarizations. This must have happened well before 1500 BC because another tripartition of Indo-European dialects deals with the double dental clusters and united Baltic and Slavic with Greek, Armenian and Iranian (itself recently divided from Indic). Developments of the syllabic nasals (Fig. 2, line 4) and the coloring of the “long” sonorants (Fig. 2, line 5) are probably even earlier but cannot be dated accurately, though the inclusion of Anatolian among them points to an early date. The sixth development, the “loss” of intersyllabic schwa, is much later, after the break-up of Indo-Iranian. As has often been pointed out, the notion of unrestricted loss of schwa is an over-simplification; a number of complex developments such as Baltic and Slavic intonations, Germanic anaptyctic vowels and Albanian vowel timbres indicate that schwa wasn’t “lost” without a struggle. For what it is worth, the Thracian river-name *Ἰστρος* < PIE **isE₁-ro-* belongs with this group. The hydronym *Νέστρος* shows the typical sibilant plus stop reflex of the central languages (Fig. 2, line 8), separating Thracian from both the western (Fig. 2, line 7) and eastern groupings (Fig. 2, line 9).

A number of morphological developments parallel these. The seventh, the substitution of the oblique case personal pronoun forms *nos* and *uos* for the original nominative **uejes* and **iūs* unites Italic, Celtic, Albanian and Slavic with Greek (Fig. 3, line 10), but separates them from both Germanic and Baltic. In the latter, *jūs* is clearly from the nominative, and I suspect that *mēs* has [m] from the verb forms and reflects original **vēs*. Clearly, Hittite *wēš* also reflects the nominative; *šumeš* is a problem, but I doubt that it is a metathesized zero-grade oblique with a suffix in light of the first person. Perhaps it is dissimilated from **yusmes* as Indic *yūyam* is from **yūžam* (Av. *yūžam*).

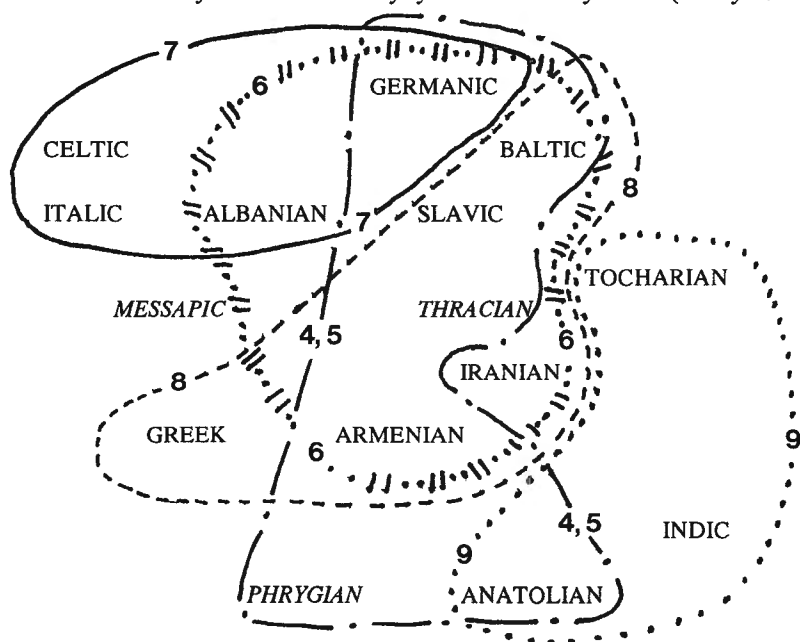


Fig. 2: Provisional Dialectal Map of Indo-European "long" resonants and schwa: 4) $\bar{R} \equiv \bar{N}$; 5) $\bar{R} = \bar{R}$; 6) $\Sigma\partial\Sigma > \Sigma\Sigma$; 7) $*tt > ss$; 8) $*tt > st$; 9) $*tt > *tst$.

Close in time to this development is the replacement of the thematic nominative plural with the pronominal plural **-oi* (Fig. 3, line 11) seen in most Italic, all Celtic, Albanian, Baltic, Slavic, Greek and, it seems, in some cases Tocharian (cf. TB *yakwe* 'horse' nom. pl. *yakwi* but TA *yuk*, *yukañ*). The fact that Tocharian avoids the

substitution of the obliques for the pronouns but partially replaces the nominal plurals with pronominal forms indicate that these changes occurred about the time Tocharian was losing contact with the rest of Indo-European, about the same time Germanic also separated. Similarly, though Latino-Faliscan has adopted the pronominal plural, Oscan-Umbrian did the opposite and spread the nominal plural to the pronouns thus Osc. *pūs* < **kʷōs* but Lat. *quī* < **kʷoi*.

An innovative middle-passive (Fig. 3, line 12) arose after Italic, Celtic, Anatolian and Tocharian had left the Indo-European orbit. This new middle-passive without *-r* is that reconstructed by Brugmann and found in Germanic, Albanian, Baltic, Slavic, Greek, Armenian and Indo-Iranian. Messapic also belongs here but Phrygian also was isolated early.

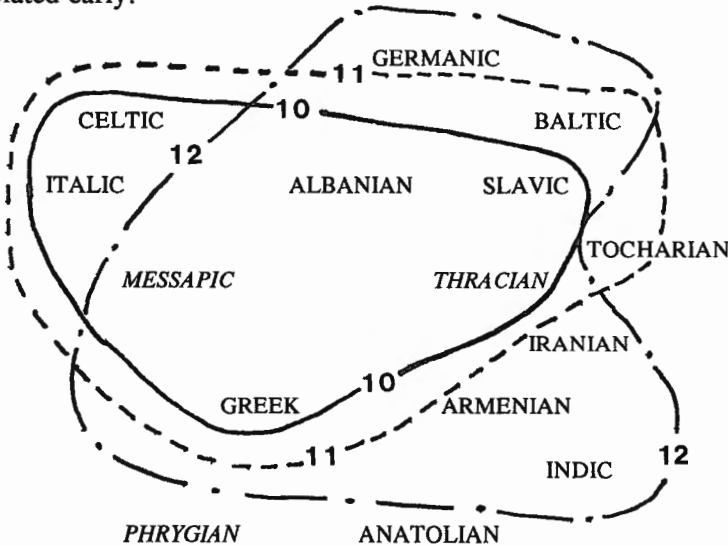


Fig. 3: Provisional Dialectal Map of Indo-European Pronominals and the Passive: 10) **ues/nos* vs **jūs/jei-*; 11) *nom. pl. *-oi*; 12) *mediopassive in -mai*.

These differing sound changes indicate that Meillet's Northwest was already a *Sprachbund*, a collection of separate but related and mutually interacting dialects at a time before 1500 BC. Through time, the differences became greater, and two spheres of interaction resulted: an eastern one dominated by Baltic or Slavic and a western one

dominated by Italic or Celtic. In the east, we see not only Winter's Law affecting selected items of Baltic, Slavic and Albanian, but the evolution of the m-forms of the nominal dative plurals (and duals) which has drawn Germanic into its orbit. Likewise, Slavic shares with Germanic and Albanian but not Baltic the lowering of PIE *ē to a vowel like *æ, a development also seen in Attic-Ionic of ca. 1000-900 BC.

In the west, the short vowel [ɪ], whether original or the result of syllabic liquids or later shortening, was lowered to [e] before back and mid vowels, e.g. OIr. *fedb* 'widow' < **uidheyeA₂*, Alb. *dreke* 'lunch' < **drīkā* < PIE **drk^w-eA₂* (cf. Alb. *darkë* and Gk. *δῆρπον* 'dinner' < **dork^weA₂* and OIr. *fer*, OE *wer* 'man' < **wīro-* < PIE **uiHrō-* (cf. Lith. *výras*). This change must predate the expansion of the ā-stems in Albanian because the short ɪ derived from the syllabic trill in *drītē* 'light' is retained where final schwa (orthographic -ē) derives from a reworking of an old abstract noun in -ti while that in *dreke* 'lunch' < **drk^weA₂* is affected by "original" final -ā.

While other Indo-European languages keep labiovelars distinct, at least in medial position, from palatals plus labial semivowel, Italic, Celtic and Germanic show no distinction at all. These same languages plus Albanian have a simple sibilant as the reflex of the double dental clusters (Fig 2. line 7). Thus it appears that Meillet's Northwest was indeed a viable areal subgrouping, a *Sprachbund* of early Indo-European times, which evolved into two distinct polarities, with Albanian and Germanic caught in between, sometimes agreeing with the eastern bloc and sometimes with the western.

Finally, there are persistent rumors of western origins for Tocharian, born of early enthusiastic over-valuation of the r-middle-passive. There is little support for such claims. Semantics and phonetics have repudiated Adams' claim (1984) that TA *wsar* and TB *ysare* 'grain' is to be connected with the Northwest substratal term for 'oats' (Lat. *avena*, Lith. *avižos*, OCS *ovlčŭ*). The three secure relations with central Europe — a shared word for 'word' (OCS *rěčŭ* and TA *raki*, TB *reki*), the common verbal abstract in **-unjeA₂* (OCS -*ynja*, Lith. -*unė*, T -*une*) and the use of 'peg' to mean 'tooth' (OCS *zobŭ*, Alb. *dhëmb*, TA *kam*, and TB *keme* — are offset by an equal number of parallels with Greek — the common words for 'son' **suH-iu-* (Gk. *ἰούς*, TA *se*, TB *soy*) and 'city' (Myc. *wi-ri-jo*, TA *ri*, TB *riye*), the shared vocalization of the a-coloring laryngeal after [i] and the methathesis of initial clusters of a-coloring laryngeal and [u]

seen in words like 'city' (Gk. *πόλις* and TB *ost* < PIE **A₂stu*). Usually those items which relate Tocharian to the Northwest are also found in Indo-Iranian and often the Southwest as well. TB *tano* 'grain' is matched by Lith. *duonà*, Hitt. *današ* 'bread' and OIn. *dhāna-* (PIE **dhoH-neA₂*); TB *parwe* 'first' matches both OCS *prŭvŭ* and Alb. *parë* as well as OIn. *pūrva-* and Av. *paurva-* (PIE **p_ṛŭ-uo-*), TA *špāl* 'head' equals Gk. *κεφαλή* 'head' and OHG *gibil* 'peak' (PIE **ghebhAleA₂*), and TB *plewe* 'vehicle' matches Gk. *πλοῖον* and ON *fley* 'ship' (PIE **ploujom*). Rather than insist on a western origin for Tocharian, it is wiser to see it as the northern-most member of an eastern group, of which only Indo-Iranian also survives, but Tocharian remained in close contact with the Northwest and the Southwest.

It is perhaps foolish for a linguist to speculate on archaeological matters, but this conference was intended to solicit such expert advice among the participants, and I cannot help but offer some speculations in hopes of augmentation or correction from my colleagues who wield the picks and dust the pots. Meillet's Northwest seems to have been a very early northern horizon that would comprehend at least six branches of Indo-European: Italic, Celtic, Germanic, Albanian, Baltic and Slavic. There is reason to believe that languages located farther south in the Balkans, Messapic and at least one of the pre-Hellenic languages were also included. This group was already disintegrating by Mycenaean times, and if our notions of pre-Hellenic hold true perhaps before 2000 or even 2500 BC. The only northern complex that seems a reasonable fit would be Corded Ware and its associates. The complex and uncertain dissolution of Corded Ware through its Bronze Age successors — Únětice, Tumulus and Urnfield — seems to me to be the correct area for further research.

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The Ancient Relationship Between the Baltic and Germanic Languages from the Standpoint of Word Formation

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Derivational affixes pass from one language into another much more easily than do other morphological affixes. That is why data on word formation are of importance in investigating relationships between languages. The derivational systems in Baltic and Germanic languages differ noticeably, but there are quite a few common innovations though they are not so pronounced as those between Baltic and Slavic (cf. Ambrazas 1991).

Two derivational innovations are common to Baltic, Slavic and Germanic languages. They could have originated at the time when these languages still were a part of Northern Indo-European dialect. Adjectives with the suffix **-isko-* are very common in Baltic, Slavic and Germanic, cf. Lith. *tėviškas*, Latv. *tēvisks*, OPrus. *tawiskan* 'fathers' III 41₁₂, OCS *dětiškŭ* 'childish', Goth. *mannisks* 'human'. Derivatives of this type are found in Italic and, possibly, Celtic too, though they are not productive in these languages (Brugmann 1906:502). In Classical Greek, the suffix **-isko-* was used to form diminutives. This meaning of derivatives with **-isko-* is likely to be very old and the suffix **-isko-* is related to the West Baltic suffix **-is-tjo-*, cf. Gk. *ἄνθρωπίσκος* 'little fellow' and OPrus. *eristian* E 681, Sudovian *ėriščias* 'lamb' (Ambrazas 1993:56).

The adjective affix **-jo* is used to form *nomina attributiva* in the Baltic, Slavic and Germanic languages, cf. Lith. *bėris*, Latv. *bēris* 'bay horse', Slav. **mold'ŭ* 'new moon', Goth. *hairdeis* 'shepherd'. Adjectives with the suffix **-jo-* became almost extinct in Baltic and Germanic, though they remained productive in the Slavic languages. However, in Germanic, as well as in Slavic and Indo-Iranian, the affix **-jo-* was often used to form *nomina collectiva* and *nomina qualitatis*. This innovation affected the Baltic languages but slightly (Ambrazas 1991:16-17).

Word formation provides some information about later relationships between Baltic and Germanic languages too. K. Būga

(1961:789-96) pointed to a striking similarity in forming adjectives by means of the suffix **-ingo-* in the Baltic languages and the forming of *nomina attributiva* by means of the suffix *-ing* in Germanic, cf. Lith. *vargìngas*, Latv. *vārdzìgs* 'miserable, poor' and OHG *arming* 'poor man'. These derivatives differ in their meanings. However, in the Baltic languages as well, some adjectives with the suffix **-ingo-* have become substantivated and have turned into *nomina attributiva*. This process of substantivization was especially characteristic of Old Prussian, cf. *naunìngs* 'new believer' III 87₈, *ragìngis* 'deer' E 651, acc. pl. *paklusmingìns* 'subordinate' III 91₁ (Kaukienė 1994:9) and also Lith. *blezdìngà*, *kregždìngà* 'swallow', Latv. *teterìga* 'grey-hen' (Skardžius 1943:121 and Endzelīns 1951:371-72). The name of the tribe *Jotvingiai*, which originally most likely meant 'the inhabitants of Jotva' (Būga 1961:136), is in origin an attribute too. Old Prussian and Jotvingian proper nouns and place-names with the suffix *-ing-* and its variants *-ang-*, *-ung-* (Gerullis 1922:247; Trautmann 1925:174; Būga 1961:136) testify that such a derivational type is really old in West Baltic. Additionally, hydronyms with *-ing-*, *-ang-*, *-ung-*, *-eng-* are recorded not only in Prussia, cf. *Elbing* (Mažiulis 1988:248-49), but also in places which had been inhabited by Curonians and Jotvingiai, e.g. *Liólìnga*, *Alangà*, *Babrùngas*, *Drubéngis* (Vanagas 1970:91, 134, 168-69, 203).

In the Baltic languages, alongside the suffix **-ingo-*, the suffix **-ino* is used without the determinative **-g-*. It should be noted that the meanings of some adjectives with the suffixes **-ingo-* and **-ino-* completely coincide, cf. OLith. *kruvingas* and Lith. *krūvinas*, OCS *krūvīnŭ* 'bloody' (Skardžius 1943:120). The suffix **-ino-* has become very common in the Baltic languages and has ousted the old suffix **-jo-*. The new suffix **-injo-* has resulted from the contamination of the two suffixes **-ino-* and **-jo-* (Ambrazas 1991:16). Adjectives with the suffix **-injo-* in Lithuanian, when substantivized, very often turn into *nomina attributiva* (Skardžius 1943:257-59; Urbutis 1965:344-46). The equivalents in Latvian and Old Prussian prove such substantivization to be very old, cf. Lith. *kaiminis* 'country man' and Latv. *kaimiņš* 'neighbor' (Endzelīns 1951:313), Lith. *drėvinė* 'wooden barrel for keeping fat' and OPrus. *dravine* 'tub' E 393 (Mažiulis 1988:223-26). This fact explains the formation of *nomina attributiva* with the expanded suffix **-ingo-* in West Baltic.

Another determinative **-d-* has become attached to the suffix **-ino-* in the Baltic languages. Thus, the suffix *-ind-* was used to form

the tribal name *Galindai*, which could originally mean (like Lithuanian *galinis*) 'residing at the end'. In this formation the derivative *Galindai* is similar to the derivative *Jotvingiai*. The suffix *-ind-* is found in the Old Prussian and Lithuanian place-names, e.g. OPrus. *Karwinden*, *Stubinden*, Lith. *Galind-ėnai* and *Nerindaičiai*, in Lithuanian surnames, e.g. *Dalinda*, *Dubrindys* and *Tilindys* (Savukynas 1963:322) and in the hydronym *Kelinda* (Vanagas 1970:167). The suffix *-ind-* has its variant *-and-*, by means of which (like the suffix *-ang-*) the Lithuanian hydronyms *Gylānda*, *Krūvandā* and others have been formed (Vanagas 1970:91). Some Lithuanian derivatives have the suffix *-und-* which is similar to the suffix *-ung-*, cf. *klabūndas* 'wind-fall', *lijūnd(r)a* 'freezing rain'.

Thus, the Baltic derivatives with the suffix **-ingo-* have become rooted in the whole derivational system of the Baltic languages, whereas Germanic *nomina attributiva* with the suffix *-ing* and its variants *-ang* and *-ung* have no such deep roots in Germanic and their origin is obscure. Moreover, Meid (1967:198) noticed that they are extremely scarce in Gothic and some other old Germanic texts. Also, almost no derivatives with the suffix *-ing* have equivalents in all or most of Germanic languages. On the basis of the data presented, Meid draws the conclusion that the suffix *-ing* became common quite late, in individual Germanic languages already. On the other hand, the adjectives with the suffix **-ingo-* have been productive in the Baltic languages (especially in West Baltic) since the ancient times.

Thus, the question is whether the suffix **-ingo-* could have come into the Germanic languages from West Baltic. The hypothesis of borrowing would make it easier to explain the presence of the consonant *-g-* in the place of the expected *-k-* in this suffix in the Germanic languages. For instance, the Germanic determinative *-k-* is the equivalent of the old Indo-European determinative **-g-* and it is often found in the diminutives, cf. ME *hillock* 'small hill', MLG *hoveki* 'small yard' (Meid 1967:214). They have equivalents in the Baltic and Greek languages, cf. Lith. *mergūžė*, OPrus. *merguß* 'lass' Gr 88, *mātuža* 'bad mother' (Ambrasas 1993:54-55), Gk. *λαίγξ* 'small stone' (Brugmann 1906:609 and 676).

Two other derivational innovations can be indicative of the old relationship between West Baltic and Germanic languages. Endzelīns (1924:124) related Goth. dat. sing. *aldōmin* 'for old age', OE *ealdom* 'respect for the old' with the Lithuanian derivatives formed by the means of the suffix *-uomenė* (< **-ōmen-*). This suffix, together with

its variant *-ūmenė*, is most characteristic of the Samogitian dialect (*Lietuvių kalbos atlasas* 1991:139). At present, it is most often used to form *nomina collectiva*, cf. *jaunūomenė/jaunūmenė* 'young people', *kar(i)ūomenė/kar(i)ūmenė* 'army'. However, this is not an old meaning. Some derivatives of this type having the old meaning of *nomina qualitatis* have been found in East High Lithuanian dialect, cf. *jaunūomenė* 'youth', *mažūomenė* 'childhood'. The suffix **-ōmen-* is likely to have been used to form *nomina qualitatis* at first, and only later did they acquire the meaning of *nomina collectiva*, as in the Lithuanian language. The derivative suffix **-ōmen-* itself is descended from the old suffix **-men-* (cf. *mažūomenė* and *mažmėnė* 'childhood'), which was characteristic of *nomina actionis* and *nomina qualitatis* (Ambrazas 1992:43). The fact that the derivatives with the suffix **-ōmen-* are mostly characteristic of the Samogitian dialect, which has quite a number of features typical of West Baltic languages and are quite rare in Germanic, allows us to suppose that the suffix **-ōmen-* could have gotten into Germanic languages from West Baltic.

The adjective suffix **-isko-* was widely used in the Old Prussian language to form *nomina qualitatis*, cf. *deiūūtisku* 'salvation' III 75₂₂ and *labbisku* 'goodness' III 85₂ e.a. This derivational type is very rare in the East Baltic languages. It can partly be related to some Lithuanian *nomina qualitatis* with the suffix *-iškę*. The derivative *jauniškė* with the meaning 'youth; young people' is the only one of this type to be widespread. The other two — *berniškė* 'childhood' and *vieniškė* 'loneliness' — are found only in the texts of old authors who came from the West High Lithuanian dialect. This innovation of the West Baltic languages also has equivalents in some of the old Germanic languages (mostly Scandinavian), cf. ON *bernska* 'childhood', *fólska* 'folly' (Meid 1967:197; Range 1977:128).

Lexical borrowings from Germanic languages found in Old Prussian lead us to the conclusion that relationships between West Baltic and Germanic languages were old and of long standing. For example, two Old Prussian borrowings originated from the same old Germanic word **xelmaz* 'helmet', at different times. The first *kelmis* 'a cap' E 474 was borrowed a long time ago before the time of Christ, and the other, *ilmis* 'a certain roof on poles to protect hay or corn from rain' E 234, was likely to be formed in the first centuries AD (Būga 1959:85-87; Toporov 1980a:42-43, 311-12; Mažiulis 1993:24, 160-61). Besides, the possible traces of the name *Galindai* in Spain and in some other places in west Europe (Toporov 1979:139-40,

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1980a:380, 1980b and 1983), graves of nomadic tribes in west Lithuania (Šimėnas 1992 and 1994) and some Germanic historical sources mentioning the Balts (Gudavičius 1981;1987; Šimėnas 1989) tell us also about old and close contacts between West Baltic and Germanic tribes.

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***Seewörter* and Substratum in Germanic, Baltic and Baltic Finno-Ugric Languages**

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Introduction

The present paper aims at considering the problem of the non-Indo-European substrate on the basis of marine vocabulary. The problem was first pointed out by Feist, who as early as 1914 published the well-known list of Germanic *Seewörter*, which have no parallels in other Indo-European languages, and thus belong to a pre-Indo-European substrate. The problem of substrate in Baltic Finno-Ugric languages was formulated by Ariste (1971, 1971-72 and 1981), who has revealed a lexical layer of Baltic Finnic which has no parallels in other Finno-Ugric languages and cannot be explained as borrowing from Indo-European. The substrate words in Baltic languages can be distinguished as well, though the problem has not been formulated *per se*. The clearest example connecting the three language groups is fish names, the etymological analysis of which often ends within a closed circle of these groups.

Linguistic Survey

Seewörter

Feist's list of *Seewörter* (Feist 1914) refers to the sea, seashore, fishing, seafaring and ship-building. It includes the nouns: *See* 'sea', *Segel* 'sail', *Nachen* 'ship', *Kahn* 'ship, boat', *Kiel* 'keel', (*Spant* 'rib'), *Bord* 'board, deck', *Brise* 'breeze', *Hafen* 'harbor', *Damm* 'dam', *Reede* 'roadstead', *Ebbe* 'ebb', *Sturm* 'storm', *Zeit* in the sense *Gezeiten* 'ebb and flow', *Fels* 'rock', *Klippe* 'cliff, reef', *Strand* 'strand', *Geest* 'high seacoast', *Laich* 'roe', *Netz* 'net', (*Reuse* 'bow-net'), *Stange* 'mast' and *Steuer* 'rudder' and the verb *schwimmen* 'swim'. Feist also pointed out that almost all Germanic fish names (with exception of *Lachs* 'salmon' and probably *Wal* 'whale') have no cognates in the other Indo-European languages. The *Seewörter* list has been later supplemented by Krahe and others: *Rahe* 'yard', *Düne* 'dune', *Haff* 'bay, creek', *Woge* 'wave', *Riff* 'reef' and *hissen* 'to hoist'

(Krahe 1935:38); *Takel* 'tackle', (*das*) *Tau* 'cable, rope', *der Topp* 'top' and *Aal* 'eel' (Rosenfeld 1961:20); *Jolle* 'jolly-boat', *Boot* 'boat', *Schoner* 'schooner', *Mast* 'mast', *Gaffel* 'gaff', *Tran* 'whale-oil', *Sprotte* 'sprat' and *Watt* 'flat, shallow' (Tschirch 1966:24).

Presumed substrate words in Germanic languages are not restricted to the marine lexical group. There are problematic word lists in other semantic groups: names of birds, animals, plants, somatic words etc. Approximately 30% of Germanic vocabulary is sometimes assumed to be non-Indo-European, though the number seems to be exaggerated. A critical survey of problematic word lists was given by Neumann (1971). Though a considerable number of these words have no direct parallels in other Indo-European languages, they can be traced to Indo-European roots taking into account that word-formation has taken place within Germanic branch. Still, one can speak about a specific Germanic part of the vocabulary. The marine words constitute one of the largest such thematic groups. Part of them are of Indo-European origin, e.g., ON *ffjall*, *fell*, OS *filis*, *felis*, OHG *felis*, *felisa* 'clip', which is cognate with Gk. *πέλλα* 'stone'. However, some of them do not have an Indo-European etymology and can be regarded as non- or pre-Indo-European.

Germanic **saiwa-* 'sea'

The most prominent example of the word without an Indo-European etymology is Germanic 'sea'. ON *sær*, *sjór*, *sjár* 'sea', OE *sæ* (in toponyms also *sā-*) 'sea, lake', OFris. *sē* 'sea', OS *sē(o)*, (dat. *sēwa*), OHG *se(o)* 'sea, lake' etc., cf. Goth. *saiws* 'lake, marsh' has no accepted etymology. On the one hand (especially in the old publications) the Germanic **saiwa-*, to which these forms are reconstructed, has been connected with the Indo-European root **sei-* 'to be dripping, flow, ooze' (Walde 1927-30:2.464). The attempts have been made to connect this form with Lith. *sývai* (pl.) 'sap, gastric juice', Latv. *sīvs* 'caustic, astringent, pungent', *sīve* 'caustic, astringent substance', dial. 'manure-mud', and with Lat. *saevus* 'ferocious, savage' etc. (See Lehmann 1986:292 and Feist 1939:406 for other suggestions). However, the etymology of the cited Baltic words is also unclear (Fraenkel 1955-65:790).

Because of the absence of cognates in other Indo-European languages, it is difficult to say whether *-w-* reflects Indo-European **-u-* or (according to Verner's law) **-q^u-* (or **-k^u-*). If one supposes that there was a guttural in the root and that the original meaning was 'marsh' (as in Gothic), one can connect this Germanic word with OHG

gisig 'stagnum', *sīgan* 'to sink, be dripping', *sīhan* 'filter, strain' etc. (Zupitza 1896:68, 137). Then, the reconstruction **saiwa-* < **saigwa-* becomes possible. It was used by Koivulehto (1967; 1972), who compared Gmc. **saigva-* and **saihwaz* 'tub, bucket, scoop', and supposed that this name of 'bucket' has been transferred to the sea as a big vessel of water. However, the semantic transmission proposed is difficult to confirm typologically.

On the other hand, the Gmc. **saiwa-* has been assumed to be a borrowing from the language of pre-Indo-European inhabitants of the Baltic and the North Sea coasts (see e.g. Kluge-Mitzka 1975:696; Lehmann 1986:292). Collinder (1924:84-85) suggested Finnish as a possible source. He regarded Finn. *saivo*, Sami *saiva* 'klare Stelle im See' as the source for the Germanic word; still, according to Finnish linguists the process went vice versa (SKES 4:949). It is interesting to consider the semantics of the corresponding words in the Baltic Finno-Ugric languages. First of all, they have the meaning of 'clear water' and secondly are connected with magic, ritual terms. Cf. Finn. *saivo* 'clear water space on the lake/sea', 'clear water'. The word is often used in toponyms indicating small, closed lakes, cf. Sami *sáivva* 'closed lake'. In Finnish dialects the word means 'clear lake', 'double-bottomed lake/marsh', 'lake inhabited by spirits'. The meanings are typical for composites as well, cf. Finn. *saiivovesi* 'soft water in wells and ponds', *saivojärvi* 'limpid lake', Sami *saiwu jáure* 'saint lake', *saivvo-čacce* 'miraculous water flowing from a *saiva*'. Compare Finn. *saivokas* 'stone or wood idol on the lake-shore', Sami *saivvo* 'underground place inhabited by dead spirits', *sajěvoq*, *saiwuq* 'underground creatures' etc. (SKES 4:949).

In connection with Gmc. **saiwa-* the Baltic hydronym *Sėivų ežeras* (a lake near Puns, Poland) should be noted. It has possible a Jotvingian origin, though there is no accepted etymology (see Vanagas 1981:294). The inner form of this hydronym is close to Lith. *jūrėžeris* 'a rather big lake' or Goth. *marisaiws* 'lake (sea)', literally 'sea-lake' in both languages. Apparently it is connected with the Germanic word under consideration.

Taking into account the absence of a reliable Indo-European etymology of Germanic **saiwa-* and peculiarities of Baltic Finno-Ugric forms, the assumption of borrowing seems to be acceptable. The form could be borrowed into the Germanic, Baltic-Finnic (probably via Germanic) and Baltic languages from the language of the autochthonous pre-Indo-European inhabitants of Baltic and North Sea

shores. A possible reconstruction of the pre-Indo-European word could be ***saywa-*.

Germanic **mari-* 'sea'

The words meaning sea with a stem **mari-* are widely presented in all Germanic languages: Goth. *marisaiws* 'lake, (sea)', ON *marr* 'sea, lake', *Austmarr* 'Baltic sea', OE *mere* 'sea' (rare, poet.), more often 'lake, marsh, pond', OFris. *mere* 'sea', OHG *meri*, *mari* 'sea' etc. The corresponding sea names can be traced in five Indo-European language groups (including Germanic): Lat. *mare*; OIr. *muir*; OCS *morje*; Lith. *mārė*, more often *mārės*, *mārios* (pl.). Still the words remain problematic, and some researchers consider them as non-Indo-European, e.g. Nehring (1959:122-36) and Ariste (1981:10); note however Gamkrelidze and Ivanov (1984:673).

Within Germanic, Italic and Baltic groups the root **mor-/mar-* is present within the words with the meaning of lake, bay, marsh and other water bodies. Cf. its reflexes in Germanic: OE *mōr* 'marsh, pool', OHG *muor* 'marsh' < Gmc. **mōra-* 'marsh, bog, morass' and OE *mer(i)sc* 'marsh' < Gmc. **mariskō* 'low-lying, marshy area at the seaside'. An etymology of this word group has been repeatedly discussed. Most frequently the semantic shift 'marsh, stagnant water, lake ⇒ sea' is deduced.

Lithuanian *jūra* 'sea'

The transmission mentioned above can be confirmed typologically within another group of words for sea, namely Lith. *jūra*, Pruss. *iūrin*, OE *ēar* 'sea, ocean, wave', *wær* 'sea', ON *ver* 'sea' (poet.), cf. Av. *vairi-* 'lake', Arm. *gair* 'marsh' etc. < PIE **u̯er-*, see Pokorny (1959:80-81); Gamkrelidze and Ivanov (1984:672); Mažiulis (1993:54-56)] and the connection between Lith. *jūra* 'sea' and *jaura* 'marshy area, boggy ground' (Fraenkel 1955-65:198; Būga 1918-22:273-76). The semantic parallel Lith. *jaura* 'marsh' → *jūra* 'sea' and Gmc. **mōra-* 'marsh' → **mari-* 'sea' had been pointed out already by Būga. The fact that both Balts and Germans called the sea by a derivative from marsh, allowed him to suggest that their ancient common homeland was inland, and Būga placed this homeland in the marshes of Pripet region. It is interesting to note that on a basis of archaeological material Buchvaldek (1980) has indicated the same region as a center of spreading of Corded Ware culture, which is associated with appearance of the Indo-Europeans in Scandinavia and the East Baltic coasts.

Old Icelandic *haf* 'sea'

Other sea-names in Germanic languages are presented only within the Germanic group. ON *haf*, OE *hæf*, OFris. *hef*, MLG *haf* 'sea' etc. etymologically can be interpreted as 'rising, high (sea)' as Lat. *altum* 'high sea'. (See Buck 1949:37; de Vries 1962:201.) The other sea-names, e.g., OE *wæd* 'sea'; ON *æger*, *ægir* 'sea, god of the sea', OE *ēagor* 'sea, flow', Far. *ægi* 'sea'; OE *holm* 'sea, wave' etc. can be regarded as innovations as well. Many of them are used in poetry only.

Tide

The words for the rise and fall of the tide in Germanic languages are lexical innovations. Goth. *flōdus*, ON *flóð*, OE *flōd*, OS *flōd*, OHG *fluot*, etc. 'rising tide' originate from Gmc. **flōduz*, which is related to the Germanic verb 'to flow, to stream'. Confer ON *flōa*, OE *flōwan* etc. < PIE **plē(y)-* 'flow, stream, swam'.

The Germanic word for 'falling tide' OE, OFris. *ebba*, OS¹ *ebbiung* is of doubtful Indo-European origin. It has been connected with the Old Norse adverb *ofugr* 'back' and with the Germanic preposition with a meaning of 'withdrawal': Goth. *af* (*ab*), ON *af*, OE *of*, etc. Thus, its primary meaning, 'receding, going back into the sea, water', has been reconstructed (Kluge-Mitzka 1975:150; Pokorny 1959:53-54), however in such a case phonetical difficulties arise.

A specific Germanic name for rise and fall of the tide is MHG *getide* etc., which is connected with OS *gitīd*, OHG *gizīt*, meaning 'time, period, definite time'. Therefore, it can be interpreted as a 'definite period of time, in which rise and fall of the tide proceed'. A common Germanic name for 'time' ON *tíð*, OS *tīd*, OHG *zīt* etc. (lacking only in Gothic) is related to PIE **dī-*, **dā(i)-* 'divide' (Kluge-Mitzka 1975:878; Pokorny 1959:176).

Shore

The analysis of shore names shows that almost all of them are innovations.² Compare Goth. *staps*, OE *stæp*, OFris. *sted*, OS *stath*, OHG *stad* etc.; ON *bakki* etc.; MLG *schore* etc.; OE *breard* etc.; OE *waroþ* etc.; OE *faroþ* and some others. ON *strond* 'shore, coast', OE

¹ In High German, this word like some others connected with the sea is borrowed from Low German and appears rather late, in the sixteenth or seventeenth century.

² An exception is OE *ōfer*, OFris. *ōver*, etc. 'shore', which has parallels in other IE languages, e.g., Gk. *ἡπειρος* 'shore'.

strand has been included by Feist in his *Seewörter* list. However, it has been related lately to the Indo-European root *ster-* 'to widen, to extend'. Neumann (1971:86-87) has explained final *-d* by possible contamination with **rand-*, but from a semantic viewpoint the contamination with **sand-* seems to be more convincing.

The NHG *Geest*, MLG *gēst* (known from 1139), MDu. *gheest*, OFris. *gāstlānd*, Fris. *gāst* etc. denotes the specifics of the North Sea coast: huge, formed by glaciers and covered by heather plains to the height of 50-60 meters. The word is of doubtful Indo-European origin (Pokorny 1959:422; Kluge-Mitzka 1975:239; Birkhan 1970:58). Other seashore landscape names are innovations as well. Confer OE *hlinc*, NE *links* (pl.), which denotes comparatively flat sandy regions near sea; OE *dūn* 'down', OFris. *dūne*, MLG, MDu. *dūne* 'dune, sand-hill'.

Cliff

When considering Germanic words for cliffs, the difficulties arise in differentiating a designation of a 'sea-cliff'. Still, the words specific for marine landscape are innovations, cf. ON *sker* etc.; ON *rif* etc.; ON *ver* etc.; Icel., Far. *stakkur*. Others, e.g. ON *klif*, OE *clif*, OS *klif* etc. and ON *klettr* etc., are of disputable origin (Pokorny 1959:358, 363; Kluge-Mitzka 1975:378; de Vries 1962:316; Fraenkel 1955-65:272).

The survey of Germanic sea and marine landscape words presented suggests that the sea realities were new for Proto-Germanic tribes and the new designations were necessary. Then, either 1) the new meaning has been given to the old words, or 2) the new words were constructed on the basis of the old ones, or 3) the new words were borrowed from a non-Indo-European source.

Autochthonous vocabulary in Baltic Finno-Ugric languages

Traditionally the Baltic Finnic languages are assumed to be the source of the non-Indo-European substrate for Baltic and sometimes for Germanic languages. However, the problem of substrate exists in Baltic Finnic languages themselves, and attempts to trace a base for a Baltic lexical substrate in them frequently end in a circle. Ariste was the first to point out that many words of the problematic Baltic Finnic lexical layer could be borrowings from the language of pre-Finnish and pre-Indo-European inhabitants (Ariste 1971, 1971-1972 and 1981). Some of those words are connected with the sea. Note first of all, that the Baltic Finnic sea name itself is a borrowing (Pirotti 1973:17-18) from Baltic: Finn., Est. *meri*, Liv. *me'r* etc.

The amber name, Liv. *e'lm*, Est. dial. *elm*, *helm* has no accepted Finno-Ugric etymology. It is worth noting here that the Baltic amber name, Lith. *giūtaras*, Latv. *džiņtars* is of problematic origin as well.

The name of the Estonian island Ruhnu (in the Riga Gulf) has no Finno-Ugric etymology, either. Apparently, it is connected with Latv. *ruðnis*, Lith. *ruinis*, *ruonis* 'seal' (in Latvian the island is called *Roņu sala* 'Seals' island'), the origin of which is not known as well (Fraenkel 1955-65:746). Both the Estonian toponym and the Baltic name for seal can be referred to an autochthonous substrate.

Another example without a distinct Finno-Ugric etymology is the Est. noun *selg* 'back', Liv. *sālga*, Finn. *selkä* etc. In compounds it has the meaning 'sea expanse', cf. Est. *mereselg* (lit. 'back of the sea'). The word is widely used in Latvian. The Latv. noun *selga* 'sea expanse' and adverb *selgus* 'far from the shore' was supposed (Thomsen 1890:278-79) to be a borrowing from Liv. *sālga*. However, in northwest Kurzeme, actually in the Livian territory itself, old fishermen rarely know *selga* and use Latv. *augšjūra* (lit. 'upper sea') instead (Laumane and Nepokupnyi 1970:192-93). The word could be borrowed from an autochthonous source in Baltic Finnic and the Baltic languages.

Fish-names

Fish-names pose a special case among problematic words in Germanic, Baltic Finnic and Baltic languages. Traditionally problematic fish-names are interpreted as borrowings from one language to another. Some of them really are borrowings of different epochs; see Laumane (1973). However, etymological analysis of many of them usually ends in a closed circle. If the word is considered to be a borrowing from another language group, its etymology in the latter is usually undefined, and the pre-Indo-European and pre-Finno-Ugric substrate origin has been proposed for, e.g.: Est. *siig*, *silk* (Būga 1918-22:561); Latv. *ķilava*, *salaka*, *viimba*, *silķe*, Lith. *silķė*, OPrus. *sylecke*, Finn. *sill*, Est. *silk*, Liv. *silk*, Latv. *reņģe*, Est. *rāim*; (Šmits 1930:73); Russ. *snit*, *snet*, *snitok*, Est. *tint*, Finn. *sintti*, Lith. *stinta*, Latv. *stinte*, NHG *Stint*, Norw. *stinte* (Gerd 1970:89-91); Est. *taim*, Finn. *taimen*, Liv. *taimin*, Swed. dial. *taimen*, *tajmenlax*, Latv. *taīme*, Est. *rāāts*, NHG *Rebs*, Latv. *repsis*, Finn. *siika*, NHG, Norw. *sik*, Dan. *sig*, Russ. *sig*, Latv. *stga*, *stka* and Lith. *sykis* (Ariste 1981:12-16).

Summary of the linguistic survey

The linguistic survey presented here shows that in the Germanic, Baltic and Baltic Finno-Ugric language groups there are words of

possible substrate origin. A part of them seems to be a common inheritance, remains of the languages of the autochthonous inhabitants of northeastern Europe.

Scheme of the settlement of the Baltic area

In search of support of the common substrate hypothesis, we have made an attempt to survey archaeological data. The scheme compiled is presented in Figure 1.

The Palaeolithic age

The first inhabitants of south Scandinavia and Denmark are identified as representatives of the Hamburg culture, a branch of West European Madlen. They came from the southwest, settled in south Scandinavia and spread subsequently to the east Baltic coast, the territories of future Balts. Approximately at the same period, the representatives of Swiderian culture approached the east Baltic coasts from Central Europe (Gurina 1956).

The Mesolithic age

In the territory of Denmark, North Germany and Britain, the Maglemose culture was dominant in those times. It was discovered in the beginning of our century (Brøndsted 1960:58-61, 82) in Zealand and has been shown to be a successor of the Palaeolithic Madlen-Hamburg culture.

In the East Baltic region, the Kunda culture (so called after the first find in Estonia), a successor of the Baltic Madlen, developed. In the territory of upper and lower Nemunas, the Mesolithic Nemunas culture formed on the basis of its ancestor, the Swiderian culture, and under a strong influence of the Maglemose. According to Rimantienė (1984:60) the formation of the Kunda and Nemunas cultures took place via migration of the Maglemose culture from the west.

The Maglemose and Kunda cultures are recognized to be closely related. Thus, in the Mesolithic period, the southwest and east Baltic coasts were inhabited by people of the related Maglemose-Kunda cultures. From an anthropological point of view they were Caucasoids.

In the beginning of the Mesolithic age, the glaciers retreated from Finland. The settlement of Finland is connected with the Suomusjärvi culture (Äyräpää 1950; Luho 1967), which approached the region from the East (Meinander 1982:10-32). Anthropological data indicates both Caucasoid and Uralic features (Gurina 1956).

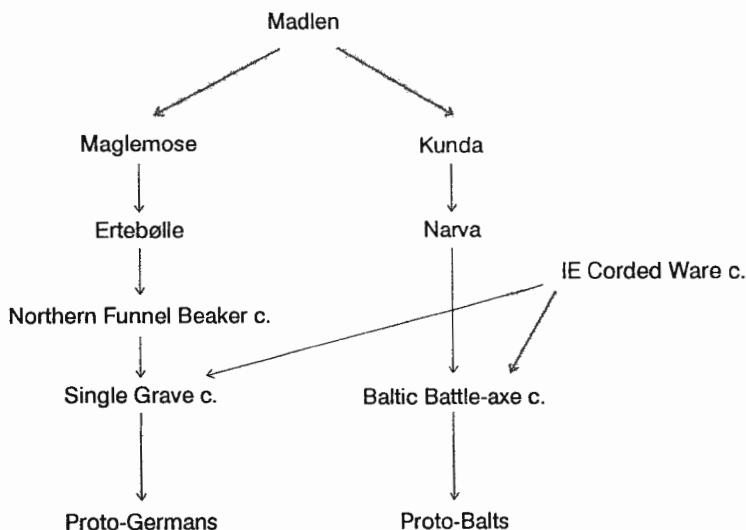


Fig. 1: Scheme of Baltic area settlement.

The Neolithic period before the arrival of Indo-Europeans

In Denmark, south Sweden and the Pommern region, the traditions of the Maglemose culture were inherited by the Ertebølle culture. (More detailed succession is presented by the scheme: Maglemose ⇒ Kungemose (a branch of the Maglemose) ⇒ Ertebølle). In the East, the Ertebølle culture reached the borders of the Neolithic Nemunas (the successor of the Mesolithic Nemunas) and Narva cultures. The territory of the latter spread over Estonia, Latvia and part of Lithuania. It is not in any way related to the Finno-Ugrians. On the contrary, its discovery in the 1950's (Jaaniits 1959; Gurina 1967) forced out the assumption that the east Baltic region was inhabited by Finno-Ugric speakers during the entire Neolithic age.

The closeness of the Narva and Ertebølle cultures apart from their common origin is ascertained by archaeological data (Girininkas 1985). In the beginning of the Neolithic age (4000-3000 BC), the Sperrings culture (or K1) appeared in Finland as a result of the migration from Karelia and the upper Volga. In the end of the early Neolithic period (ca. 3000 BC), representatives of the Comb-Pit Ware culture (or KII) intruded upon the northeast territory of the Narva culture. It is generally accepted that KII is the starting point for the

formation of the Baltic Finns (Moora 1958). Then, the center of the formation of the Baltic Finns should be Estonia.

In southern Scandinavia, Denmark and northern Germany, at approximately the same time as the KII invasion into North Narva, the Ertebølle culture was changed by the Funnel Beaker (or TRB) culture. Being composed of several heterogeneous cultural groups, it spread over a vast territory far away from the Scandinavian region (including the Netherlands and the basins of the Oder and Vistula). In the southern and eastern regions, the formation of the culture is connected with the arrival of agricultural Indo-European tribes. However, it can be supposed that its formation in Denmark and southern Scandinavia proceeded in another way, without the migration of a new population. The autochthonous Ertebølle population, hunters and fishers, adopted a new way of living, agriculture and cattle-breeding. Thus, the cultural change of Ertebølle to the agricultural TRB had taken place without changes in population (see e.g. Troels-Smith 1954; Becker 1961; Brinch-Petersen 1973).

At approximately 2500-2300 BC, the people of the Corded Ware and Battle-Axe culture, presumed Indo-Europeans, appeared at the Baltic coasts. Here they found in southern Scandinavia, Denmark and northern Germany the northern Funnel Beaker/Ertebølle culture. Between the Oder and Vistula mouths was the eastern branch of Funnel Beaker culture (at the period considered transformed into Globular Amphora culture). Between the Vistula and Daugava mouths were the Nemunas and Narva cultures; to the north of the Daugava, the Proto-Finnic Comb-Pit Ware culture was situated.

As a result of the merging of Corded Ware with the local pre-Indo-European cultures, various archaeological cultures developed (Single Grave, Baltic Battle-Axe, Rzucewo/Pamariu and others), which formed the basis for the eventual formation of Proto-Germans and Proto-Balts.

Concluding remarks

The linguistic analysis of the most common Germanic sea-name, *sea*, shows that the word is of non-Indo-European origin and can be regarded as a borrowing from the pre-Indo-European source into Germanic, Baltic Finnic and maybe Baltic languages. The assumed origin of Germanic *sea* supports the hypothesis that old Germanic tribes and their Indo-European ancestors were not acquainted with the sea. Indeed, the survey of a number of other marine words (names of

sea, tide, shore and cliff) shows most of them to be innovations, and some of them to be of undefined etymology.

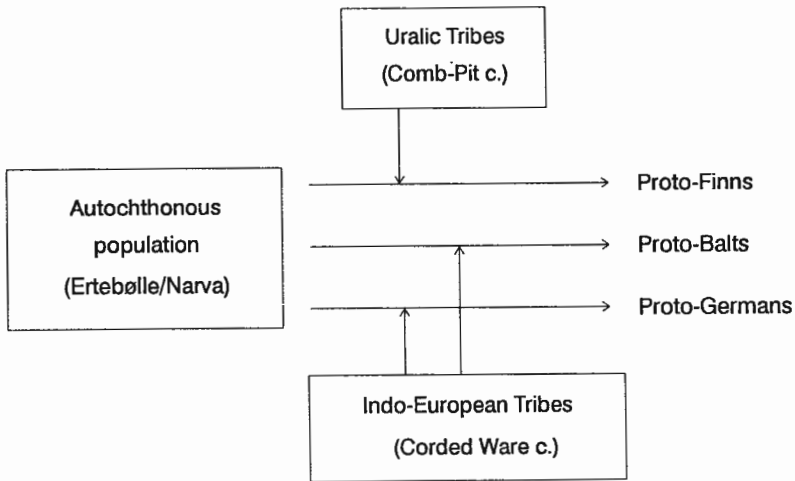


Fig. 2: Scheme of possible links between autochthonous substrate and Germanic, Baltic and Baltic-Finnic languages.

In Baltic Finnic languages, the group of words connected with the sea can be distinguished, which can be attributed to pre-Finno-Ugric and pre-Indo-European substrate. This is supported by linguistic material on fish-names in Baltic, Baltic Finnic and Germanic languages.

The hypothesis of a common substrate in these three language groups has been proposed. It should be noted that the idea of the common substrate in Germanic, Baltic and Slavic languages has been pointed out by Polomé (1986 and 1990).

A survey of archaeological data supports the hypothesis. The idea is illustrated in Figure 2, where the scheme presents the possible links between autochthonous substrate and the language groups considered.

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Indo-European Architectural Terms and the Pre-Indo-Europeans: a Preliminary Study

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This paper is an initial effort towards systematizing random fragments of evidence from a selected segment of the Indo-European language-and-culture system which is associated with people believed to have migrated out of the Russian steppe from about the end of the fifth throughout the third millennium BC (Mallory 1989; Gimbutas 1991). The hypothesis argued herein is as follows. Indo-European dialects contain a number of words designating a house and its architectural components. Such terms are attested in various degrees in languages of the descendent stocks. It should be possible, therefore, to create a taxonomy of Proto-Indo-European terms for house and of terms for their concomitant architectural features. This hypothesis grows out of the following premises organized under three major points.

First, architectural craftsmanship, among other cultural traits such as language and social institutions, is one of the aspects of culture characterizing a group which involves linguistic knowledge transmitted from generation to generation.

Second, undoubtedly geographic factors may influence the location and materials used for a house or settlement. Tringham (1971), for example, has noted the great multiplicity of environments, temperature and other considerations in the areas settled by the first Neolithic peoples of the Balkans. Nevertheless, the final choice of location and the finished product are features subject to cultural imperatives stemming from economic and social conditions. As a case in point, mobile groups such as hunters and gatherers require less permanent structures than sedentary agricultural people. In addition, the choice of raw materials inevitably alters both building technology and its end result. Variations, for instance, are particularly evidenced with the utilization of organic sources such as cereal straw whose diversity of use depends upon the existence of certain types of economy; or with mud, which may be used unprocessed, or as a

coating on an existing structure. Only if the economy permits, however, can the mud be processed into kiln-dried bricks. As to the influence of social factors, the organization of the social unit which the house is built to shelter also determines its size. Large houses, in fact, are believed to accommodate larger social units than the nuclear family. Indeed, a shelter, either in aggregate settlements or in isolation, is inextricably connected with the social organization of the community and the interrelation of the latter with other communities. If there are questions of security, for instance, then the construction of shelters involves not only socio-political organization, but even methods of warfare (Clark 1952:131).

Lastly, inherited traditions such as the placement of the hearth in a definite area or the use of a specific weaving technology also affect the outcome of a building and its construction.

Linking the above considerations to a specific cultural group has long been one of the principal aims of archaeology. Yet because language is an integral part of any human community, no single aspect of any culture can be properly analyzed without also analyzing the linguistic signs that reference it. In fact, within Indo-European studies, where a large selection of data are available not only from the fields of linguistics and archaeology but from literature, mythology and other areas, reconstructing a segment of the palaeoculture can be a very fruitful task. Formulating a nomenclature of Proto-Indo-European architectural terms might prove a valuable tool to studies of lexico-cultural seriation aimed at establishing the time and location of Indo-European spread.

The background

Throughout history caves have always provided an accessible shelter and have, therefore, been occupied by people at various times. Modern cave occupation is found, for example, in cliffs of limestone in both France along the Loire and Italy at Posillipo, Naples. Though the inside of caves may easily lend themselves to a multiplicity of modifications by their occupants, caves, in general, show a more restricted range of man-made external structural modifications. In the case of artificial dwellings, on the other hand, one is faced with a great range of variation, hence, the difficulty in providing a typology of building construction. In fact, archaeologists do recognize not only the importance of a particular type of shelter but also that of its arrangement in a settlement pattern to the socio-economic fiber of a

culture. Nonetheless, a classification of house buildings has proven an arduous if not impossible task. There are a number of reasons for this predicament. First, prehistoric houses are considerably more difficult to locate than either graves or larger above ground monuments such as mounds and stone structures. Second, from the rather meager evidence of a ground plan, it is difficult to recreate the upper arrangement and composition of a collapsed building, particularly when the latter was made of organic matter. As a case in point, even at a site as well preserved as that at Skara Brae, in the Orkney islands, Scotland (ca. 3100-2500 BC) archaeologists hold conflicting opinions as to the actual structure and material composition of the roof. Lastly, workers in the field are frequently not permitted to excavate an entire settlement and thus cannot obtain fuller information on the actual layout of a site and hence infer the possible significance to its social organization.

Nevertheless, today, the availability of a large number of well-excavated sites and that of the improved techniques developed in these last decades, such as radiocarbon dating, furnish enough new archaeological material to greatly facilitate the work of the philologist engaged in *Wörter-und-Sachen* endeavors. As a result, a general classification of Proto-Indo-European architectural terms could be realized. To that end this paper will focus on selected Proto-Indo-European terms for house and for building construction as well as on their evidence in the archaeological record of western, central and northern Europe. Subsequent work will involve, in more detail, south and southwestern Europe.

Pre-Indo-European in north and western Europe

In books on the history of architecture, descriptions of man-made dwellings which represent the intermediate stage between the cave and the village begin with the description of the site of Jericho in Jordan. This site, which is dated at about the eighth millennium BC, contained round mud-brick shelters with stone foundations. Typically, however, the village of the Near East, such as Çatal Hüyük which is dated between the later seventh and mid-sixth millennium BC, was characterized by a complex mud-brick agglomeration of flat roofed houses accessed from an opening in the ceiling (Hodder 1990:8).

Neolithic north and northwestern Europe was singularly unaffected by the developments in building construction of the Near East and the European Neolithic cultures developed their own crafts skills of architecture, weaving and pottery (Sherratt 1994:167-68). In

fact, a number of contrasting regional cultures flourished in central and northern continental Europe. More specifically, the Funnel Beaker (TRB) culture (4500-3500 BC) was distributed into five regional groups: (1) the western group (Hünebedden) in the area today known as the Netherlands; (2) the southern group in Germany, with Baalberge and Salzmünde variants; (3) the southeastern group in the Czech Republic and the Slovak Republic; (4) the eastern group in Poland; and (4) the northern group in Denmark and Sweden. Towards the middle and end of the fourth millennium BC, the TRB superseded even the Nemunas culture, which had thrived earlier in the areas of northeast Poland and southern Lithuania, as well as the Narva culture, which had flourished along the southern coast of the Baltic Sea (Gimbutas 1991:141-44).

Each region covered by the TRB horizon had its own distinctive character and consequently produced a great diversity of house plans and methods of construction,¹ yet the woodcraft of this period expressed itself predominantly in the construction of longhouses with a rectangular floor plans. In Neolithic central Europe, for instance, the house excavated at Bylany, near Prague, a Linearbandkeramik (LBK)² (ca. 4300-4200 BC) site, was a large rectangular post-framed house (Gimbutas 1991:40-41, 330). Though more commonly the floor plan of the longhouse featured a tripartite division of space, there are examples of floor plans subdivided into two sections and even instances of no internal sectioning at all.

¹ As a case in point, the TRB culture features pit-dwellings in earlier phases, at Cmielów, southern Poland, for example, and above-ground houses in later phases as at the Flögeln district of Cuxhaven on the Eekholtjen peninsula, dated by radiocarbon to the second half of the fourth millennium BC. Above-ground houses had three- or four-room floor plans. In one of the houses there were no post holes on the foundation trench. Pairs of timber uprights along the middle axis of the longhouse functioned as holding elements for the roof with a few posts outside the long walls on both sides. The floor plan was divided into four rooms by partition walls (Gimbutas 1991:135).

² The LBK cultural complex of the early and middle Neolithic was broadly distributed in central Europe from western Ukraine to eastern France, ca. 4500-3900 BC. It derived from the Körös culture in the northern Balkans. The characteristic rectangular longhouse can be found at numerous sites such as Köln-Lindenthal, Germany; Olszanica, southern Poland and Aldenhoven

Thus, for the above-ground construction material, timber was the common feature which predominated in this temperate climate.³ The longhouses were generally single storied. Five rows of posts ran the length of the structure. The two outer rows on each side braced wattle and daub walls while the remaining row of posts ran in the center of the structure supporting the roof (Gimbutas 1991:41-2). In anthropology, such large size buildings are generally associated with either several households or even with groups organized by age or sex (Gimbutas 1991:330). In the case of the European longhouse, archaeologists have found that, in addition to human, there is evidence of concurrent animal occupation. Smaller buildings excavated at this time are thought to have been workshops or storage sheds. Longhouses were either clustered in settlement cells or free-standing in single dispersed patterns. In either case, these agglomerations show no clear signs of streets. Moreover, most early sites were essentially unbound by defensive structures, such as palisades or ditches (Gimbutas 1991:39).

In Central Europe, particularly in the ensuing later phases of LBK and more specifically with the Stroked Pottery and the Rössen cultures, the trapezoidal house plan predominated.⁴ As a case in point, this type of building as excavated at Deirinsen-Ruploh was an extremely long house of fifty meters with a wide entrance area and a more secluded rear portion (Sherratt 1994:176). Even with the trapezoidal plan, the outward construction remained that of timber and wickerwork. The walls were built by setting timber into slots cut in the subsoil or, alternatively, by the bedding trench method (Gimbutas 1991:83). The outer posts were interspersed with wickerwork of branches. A row of posts in the middle supported a pitched roof.

Thus, house construction of the pre-Indo-European cultures can be characterized as being predominantly that of timber longhouses, whether rectangular or trapezoidal in plan. (See Fig. 1).

Plateau near Köln (Gimbutas 1991:330).

³ Stone was used in some areas like the Mediterranean or for some large structures like funerary monuments.

⁴ The Stroked Pottery of west-central Europe included the areas of today's Bohemia, south Poland, east and southern Germany, while that of the Rössen encompassed today's Rhineland and southwestern Germany.

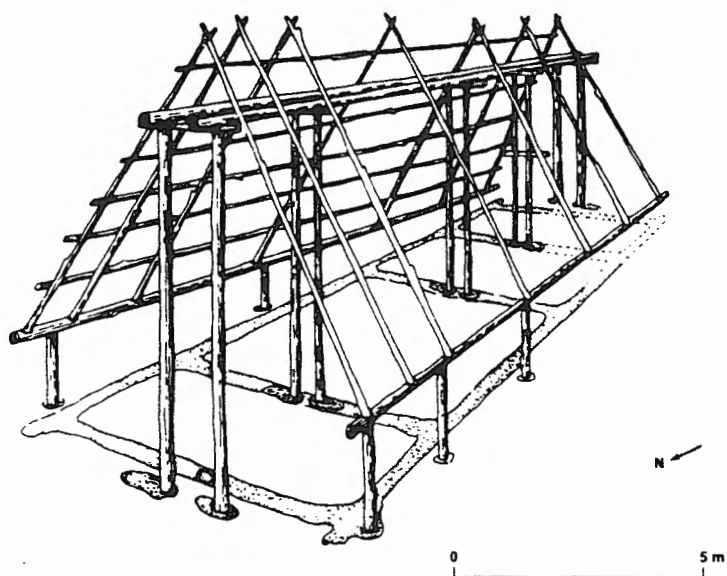


Fig. 1: Reconstruction of a TRB house frame (after Gimbutas 1991:133).

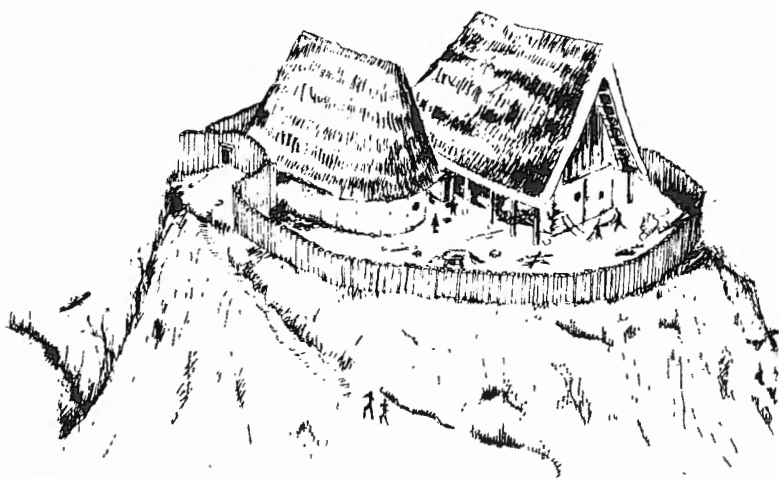


Fig. 2: Reconstruction of the Vučedol hill-fort (after Gimbutas 1991:373).

The emergence of Steppe (Kurgan) elements

During the second half of the third millennium BC, fundamental changes took place in northern and western Europe with the spread of the Corded Ware complex, which stretched from the upper Volga in central Russia to southern Scandinavia. Local differences were mitigated by the spread of the Corded Ware complex. These migrations from the south covered the northcentral plains of Europe,⁵ including the areas known today as Germany, Poland, Holland, Denmark and the east Baltic states. The newcomers intruded in the territories of the TRB, that of the Nemunas, Narva and Volsovo cultures. These newcomers, believed to be Indo-European speakers (Mallory 1989; Gimbutas 1991:383-92), are characterized by Gimbutas as the Kurgan culture or horizon (1991:352).

The Corded Ware Horizon (3200-2300 BC), which flourished along the northeastern and central-western European plain, has been connected with speakers of Indo-European dialects ancestral to what later, during the Urnfield period, will be identified as the Proto-Slavic, Proto-Baltic, Proto-Germanic, Proto-Celtic and Proto-Italic dialects (Sherratt 1988:591-93; Mallory 1989:108). In the area of the Danubian basin, particularly in Hungary and western Slovakia, the Baden-Vučedol culture (ca. 3400-2900) — an amalgamation of indigenous Lengyel and TRB culture with kurgan elements — characteristically features apsidal houses,⁶ in contrast to earlier rectangular or trapezoidal plans. At Vučedol, for instance, two such small houses were built with timber uprights and had walls of clay daub. The floors were of plastered clay. The floor plan consisted of two rooms, each one having a rectangular hearth. According to Gimbutas, the earliest evidence for this type of house is found in the Salzmünde phase of the Baden culture on a hilltop settlement along the

⁵ The Corded Ware complex superseded the Lengyel culture broadly distributed in eastern Europe. Lengyel settlements varied considerably, but many are characterized by trapezoidal longhouses as at Breść Kujawski (Gimbutas 1991:81-83), while others are surrounded by defensive works such as at Hluboké, Mašůky and Tešetice-Kyjovice (Bahn 1992:287).

⁶ Apsidal houses are also known from the Balkans, for example at Ezero, in Bulgaria (Karanovo VII), Baden-Kostolac in the west Balkans, in Macedonia, in northeastern Greece (Sitagroi V), central and southern Greece (Lerna IV, Thebes and Asine) and also in Turkey (Troy Ib).

river Saale near Halle. The site dates before the middle of the fourth millennium (Gimbutas 1991:364). (See Fig. 2).

Thus, this new type of house construction supersedes the longhouse of the indigenous cultures to predominate through the Iron Age. Typically, the apsidal house may be described as a small rectangular building with at least one rounded end. The outer shell was made of vertical posts and clay daub. The floor plan consisted of a room with a porch, which at times could be completely enclosed. The floors of apsidal houses were often plastered clay. A hearth was set in the center of the room. These small houses usually stood on fortified hilltops rather than in river valleys and are believed to have been the seats of chieftains. Their settlement pattern consisted of meager scattered groups of small buildings, some of which were undoubtedly used for storage.

Apsidal houses are, of course, known from pre-Indo-European cultures such as the Lengyel, Vinča, Butmir and Dimini groups. According to Gimbutas (1991:364-72), however, those of the Baden-Ezero-Troy type appear to have had a different cultural imperative, for they were found exclusively on hillforts and must have served as the seat of chieftains. The Baden-Vučedol culture, which shows connections to the North Pontic Maikop culture, features, in addition, semi-subterranean buildings. Both the apsidal and the semi-subterranean types contrast clearly with the pre-Indo-European pattern described above.

During the Chalcolithic (ca. 2500-2100 BC), the Bell Beaker culture, a regional variant of the Corded Ware, spread throughout Europe (Sherratt 1994:251). The Bell Beaker tradition appears to be an amalgam of Vučedol and Kurgan (or Steppe) elements of the late Yamnaya culture. The latter had developed north of the Caucasus. The Yamnaya culture on the Russian steppe is characterized, in the archaeological record, by the erection of pit dwellings and by graves covered by wooden beams and marked by a round kurgan. This type of construction comprised a central hollow covered by a light wooden roof. The pit grave is, in fact, a house-like structure. This tradition continues moving across Europe and can be vividly seen at the Bronze Age burial sites of Leubingen and Helmsdorf, which featured "pitched-timber burial chambers" (Cunliffe 1994:260).

Proto-Indo-European house terminology

The existence of these numerous elements in the material culture

should leave traces of their existence in the linguistic record. That is, scholars should be able to find, in the various Indo-European dialects, words that refer to wooden structures, to the technology utilized to build them, to their function and lastly, to the way these wooden construction were arranged. The list should include words for timber, hollow or pits, for arching and weaving, for wall, roof, hearth and even doors. And, in fact, through the comparative reconstruction of the vocabulary of the daughter languages, scholars have been able to recreate a large segment of the Indo-European vocabulary dealing with this subject. Several Indo-European roots allude to dwellings and to the technology and materials used. Much of the reconstructed vocabulary is concordant with the evidence supplied by the archaeological record. To cite only a few examples, scholars reconstruct a late Proto-Indo-European o-grade root noun, **kou_Ω-os* from a root (1) **keu_Ω-* with the meaning of 'swell, vault, hole'. This root is attested, for example, in Mlr. *cūa*, Lat. *cavus*, Gk. *κόος*, all lexemes with the meaning of 'hollow'. Among the suffixed forms of this root are PIE **kou_Ω-H-lo-* in Gk. *κοῖλος* 'hollow' (< **κόφιλος*), Myc. *ko-wi-ro*, Alb. *thellë* 'deep' and a zero-grade suffixed form **ku-m-olo-*, Lat. *cumulus* 'heap'. Also listed, though separately, by Pokorny (1959:588) is a root (2) **keu_H-* 'bend, arch' with the extended proto-form **keu(H)-b/p-* evident in Lith. *kaupas*, OCS *kupŭ* 'heap' OE *hēap*; OHG *hūfo* 'heap' Gmc. *hūfi*, OE *hȳf*, 'hive', OS *hūva*, OHG *hūba* 'bonnet'; and with zero-grade, Gk. *κυπέλη* 'hollow, chest, vessel'. Yet, the realizations mainly in o-grade and zero-grade of the first root (1) **keu(H)-*, and the s-mobile of the third root (3) **(s)keu(H)-* suggest that further investigation is needed to explore the notion that these may be polysemic forms. Support for this stance is the semantic shifts of the second root (2) **keu_H-* 'bend, arch'.⁷

From the preceding forms, most of which contain either convex or concave notions, one might infer that the early Indo-European above

⁷ Further reference to roundish or apsidal structures are the parallel developments of the PIE root **gēu-* 'bend' and its extended forms. Thus, PIE **gup-* is evident in ON *kofi* 'room', OHG *kubisi* 'hovel', OE *cofa* 'cove, bed chamber' Gk. *γύπη* 'nest'. Evidence of the PIE root with a *t*-extension is found in Lat. *gutur* 'throat', Gk. *γύης* 'bent wood of the plow' *γύαλον* 'hollow' OIc. *kūla* 'knob, hump', Latv. *guzma* 'heap', MHG *kūte* 'hole, pit hole', Norw. dialect *kota* 'pothole', but also 'hut of branches', OE *cytwer*

ground house-structure was constructed by bending or arching wood and, by excavating a hollow. Such a notion must be investigated by correlating data from a variety of sources so as to either disclaim it or pursue it further. Archaeological evidence, in this case, seems to support the linguistic inference with a number of examples of semi-subterranean housing from cultural traditions connected with Indo-European speaking people, such as, the Yamnaya culture.

Following this line of inquiry, we can also investigate linguistic forms designating not only the upper construction of the pit-dwelling, but the technology employed to achieve it. Such is, for example, the Proto-Indo-European root **klei-* 'incline' which has numerous suffixed forms: with *-n-* Gk. κλίνω 'lean, bend', Skt. *śrāyate* 'lean on', Lat. *clīnō*, Lith. *šlienù*, OIr. *clóen* 'crooked', OS *hlinōn*. There are again also derivatives of the root in *-t-*. When attached to a root this morpheme appears to denote the result of the action. The situation seems to suggest that the *-t-* extension has a perfective function. This perspective aspect is evident, for instance, in OE and OFris. *hlid*, 'cover, lid', OE *hlydan* 'cover, enclose', OHG *lita*, 'hill-slope'.

Inclined poles had other uses as well. Again, the naming of those items is revealing of the technology employed. The technique of intertwining post obliquely is evident, for example, in the Latin word *clitellae*, a diminutive of **clittra* 'pack-saddle', Umb. *kletram*, 'litter', Mlr. *clithar*, 'hedge', W *cledr-en* 'fence' (< **kli-tr*), Gk. κλίτος 'slope', κλισίον 'booth, tent', Mlr. *clíath* 'hurdle', *cléthe* 'roof-beam', Latv. *slita* 'fence of horizontal pieces of wood' (Lehmann 1986:187). Meringer (1904:117-125), in fact, demonstrated that the technique of intertwining inclined poles was used for a variety of constructions, such as hurdles, roofs and pack-saddles, as late as the beginning of this century.

Once again, the semantic spheres of the cognates are suggestive. Linguistic data alone are not sufficient, however, for a full analysis of these terms. Archaeology must supply evidence of structures consonant with the semantics of the reconstructed terms. And indeed, the archaeological record reveals that hollows with a wooden superstructure made of leaning posts were a characteristic feature not only of pit-dwellings, but of pit-graves built by the Corded Ware complex of northern Europe and the Yamnaya culture of central

'fishnet'.

southeastern Europe. Evidently, Indo-Europeans built houses of leaning posts also for their dead. This cultural trait is, of course, preserved in the linguistic record as well. In fact, forms associated with the Proto-Indo-European root **klei-* 'incline' discussed above, when featuring a *-yo-* extension (**kloi-yo-*), refer to mortuary structures: Run. *hlaiwa* 'grave', OHG *hlēo*, pl. *lēwir*, 'burial mound' from a PGmc **hlaiwja*. This is not surprising for the *-yo-* morpheme is used with many roots in the religious-ritualistic sphere. The notion of mound inherent in these stems is further encountered in Lat. *clivus* 'hill', while that of curve is more explicit in Lith. *šleivas* 'bowlegged'. Clear reference to a free standing structure is encountered in OCS *xlěvŭ* 'chamber' *xlěvina* 'dwelling'. Though borrowed into Slavic from Germanic, the last two terms retain the notion of a 'room', or 'house', partially constructed underground. And indeed, a kurgan is but a mound of earth set over a house for the dead.

Documentation on pit-dwellings as plain log tents constructed at a forty-five degree angle and designed to accommodate a small family unit has come down to us also from reports in historic times. Indeed, Roman authors such as Strabo specifically state that the Germanic tribes lived in subterranean houses.⁸ Both Strabo and Pliny also speak of Germanic tribes loading their houses on wagons and setting them up in a new place. Additionally, reference to yurt-like structures are evident on the column of Marcus Aurelius, for instance, which depicts Roman soldiers setting fire to a Germanic village. The village appears to be composed of roundish log huts. This type of construction clearly goes further back in time than the La Tène period pointed to by the sculpture.⁹

Wood-structure technology

Thus, the existence in Indo-European cultures of some kind of construction technology for semi-subterranean housing is inferred for

⁸ "They live in underground houses, which they call *argillae* and it is through tunnels that they visit one another, back and forth, and also admit strangers to the oracle which is situated far beneath the earth" (*Geographia* 5:4-5).

⁹ Round houses are more reminiscent of a former yurt than of a longhouse. The yurt is still widely used today by traditionally nomadic people in an area that stretches from the Caspian Sea to central Mongolia. The dwelling is circular in plan with walls made of a lattice frame of willow wands (Oliver

the proto-culture by the existence of a large number of reconstructible proto-forms. The reconstructed terminology also reflects the methods employed in the construction of walls and roofs and designating beams and planks; Skt. *svārus* 'post', Lat. *surus* 'twig', as well as to OE *swer* 'post', ON *súl(a)*, OE *syl*, OFris. *sēle*, OS and OHG *sūl*, plural *sūli* 'pillar' have prompted scholars to reconstruct a Proto-Indo-European root **s(y)el-* 'thatched gridwork of beams'. Indeed, a pillar is but a thick piece of wood used in construction vertically; in other words, it is but a piece of lumber. When lumber is used horizontally, a semantic shift accompanies the new function so that ON *súl(a)* 'pillar', but ON, OE *syll*, OHG *swella*, f., *swelli*, n., come to mean 'threshold, sill'. Huld (1991) also has isolated a lexeme for 'thatched gridwork of beams', **tksel-men*.

A variety of other lexemes designating support beams and the like have wide distribution of cognates.¹⁰ Worthy of note is their metonymic shift to 'house' or 'family' and even to 'village' i.e., PIE **treb-/tr̥b-*, in Lat. *trabs* 'beam, rafter', but *taberna* (**trab-er-na*) 'residence', Umb. *trem-nu* 'augural tent', Osc. *trībūm* 'house', OIr. *treb* 'habitation, family, tribe', W *tref* 'village', but *a-dref* 'at home', Latv. *trāba* 'building', Lith. *trobà* and even ON *þorp* and OHG *dorf* 'village'.

Roofs were generally thatched as revealed by cognates in ON *hrōt*, Goth. *hrōt* 'roof', OE *hrōst* (**krōd-s-to*) 'woodwork of a roof', OS *hrōst* 'attic', from a Proto-Indo-European root noun **krōdā* (**kred-*) 'wood framework', but note OCS *krada* 'funeral pile'.¹¹ The vocabulary for 'wall' indicates wattle-and-daub or weaving techniques as attested by the reconstruction of Proto-Germanic **wayyu* 'wall' (*<PIE *uoi-H-u-*) from PIE **uei-(H)-* 'turn, bend', ON *vegg* 'wall' Skt. *vyayati* 'cover, enclose', *váyati* 'weave' Lat. *viēre* 'weave, twist, plait'. The use of clay is inferred from the PIE **dhoigho-* 'wall' from a root **dheigh-/dhiġh-* 'knead', Gk. *τεῖχος/τοῖχος*, Skt. *dehī-*, Av. *uz-daēzi-*, or Osc. *fethúss* (acc. pl.), all lexemes with the meaning

1987:157).

¹⁰ PIE **bhleg̃*, for instance, is preserved in most branches: Lat. *fulcio* (*<PIE *bhlk-*) 'support with beams', OE *balca* 'beam', Lith. *balžiena(s)* 'piece of wood', Latv. *bālziēns* 'support'.

¹¹ The roof could also simply mean 'cover' as in many cognates pointing to a root **(s)teg* 'cover'.

of 'wall'. In addition to the main beam supporting a thatched roof, the interior of the house was generally equipped with a hearth. Thus we recover a PIE **Ae-At-r* 'fire', Alb. *vatër*, Hitt. *ḫašša-* 'hearth, altar', Av. *ātarš* 'fire', ON *arinn* 'fire-place', but Lat. *āra* 'altar' and *ātrium*, originally, 'smoke hole'. From a wide distribution of cognates, used mainly in the dual or plural, scholars reconstruct also proto-forms for 'door(s)' PIE **dhyer-/dhyor-/dhur-*.

The floor plan of the Indo-European house was of the megaron type and therefore included a storeroom. Hence from the evidence in OIr. *cuile*, 'storeroom', Lat. *cella* 'small room', OHG *hāli* 'concealing' but Gk. *κάλια*, Skt. *śālā* 'hut', we can reconstruct a root-noun **kel-* with the meaning of 'storeroom' from a PIE root **kel-* 'protect, conceal'.

The porch was partially enclosed functioning as a pen or a yard. Scholars reconstruct two proto-forms: (1) a PIE **ghor-to-*, or (2) a PIE **ǵ/ghor-dh-* (< **ǵ/gher-dh-*) as the extended form of the Proto-Indo-European root **ǵher-* 'encompass'. The pure velar is postulated from Alb. *gardh* 'hedge' and Skt. *grhā-* 'house, dwelling'. Other cognates are OE *zeard*, Lat. *hortus* 'yard', OIr. *gort* 'field', Gk. *κόρθος* 'enclosure', W *garth* 'fold, pen'.

The Bronze and Iron Ages

The Hallstatt culture of the early Iron Age (ca. 720-480 BC), which overlaps the Urnfield¹² horizon of the Late Bronze Age, was superseded in central Europe by the La Tène period.¹³ Sites excavated in Bohemia, southeast Germany and southwestern Poland again reveal wooden mortuary houses representing actual houses. One such site, for example, is the Leubingen tumulus. These mortuary houses contrast sharply with the above ground longhouses of the Neolithic LBK and Lengyel cultures and appear to be intrusive Rössen. Subterranean huts are, in addition, found on fortified hilltops, such is the Goldberg site in Noerdlingen Ries. These structures, which

¹² The Urnfield horizon of central Europe (ca. 1200-800 BC) spans the late Bronze Age. The Late Urnfield horizon is generally equated with the Hallstatt sequences A and B; Hallstatt C and D are Early Iron Age.

¹³ The La Tène period is customarily subdivided into three parts: La Tène I (ca. 480-220 BC), La Tène II (ca. 220-120 BC) and La Tène III (120 BC to the Roman conquest).

typically measured from 4.2 by 3.2 meters or 5.2 by 4.9 meters, are very small, and they precede the emergence of the Greek megaron, a construction most prominently found in Greece, for instance, at Lerna (2300 BC). The Greek megaron consists of a rectangular room with a central hearth and a porch, and it is much like its precursor, the apsidal-house.

The beginning of the Bronze Age (2500-1300 BC) is typically characterized by the construction of fortified sites. South of the Carpathians, settlements became well fortified while in northern and western Europe the meager settlements were surrounded merely by deep ditches and, at times, by banks. The majority of the settlements have the character of hillforts. In fact, the construction technology of both the Yamnaya — the forebear of the Corded Ware — and of the Únětice culture — which had flourished in central Europe — culminated during the late Bronze and early Iron Ages (1000-600 BC) in a new type of building construction: the hillfort. Sites of the Urnfield complex show an increasingly elaborate fortification technology, with timber-framed ramparts and long, heavily defended corridors. At Heuneburg (600-500 BC), a site excavated at the headwaters of the Danube, the fortification enclosed an area of three hectares. Worth of note is that while most phases show fortifications made of rubble-filled timber cribs, Phase IV shows a Mediterranean-style plan of mud-bricks on a stone foundation. Not surprisingly, given the climate, the endurance of that Mediterranean phase rampart was of short duration.

During the third and second centuries BC, the timber-framed ramparts of the earlier period quickly gave way to massive, multiple-dump ramparts and to the construction of intricate entrances. This new form sees its fullest expression at sites like that of Maiden Castle. Indeed, the *oppida* which flourished at this time are undoubtedly Indo-European constructs. For that matter, late Proto-Indo-European vocabulary abounds with forms denoting 'rampart' and 'enclosed fortified place' (Della Volpe 1988:194-206).

Preliminary conclusions

Thus far this survey supports the premise delineated at the beginning of this paper. Specifically, that architectural craftsmanship is one of the aspects of culture which involves linguistic knowledge which is transmitted from generation to generation. Indeed, linguistic data agree with archaeological data. Proto-Indo-European

reconstructed vocabulary suggests that the Indo-Europeans favored a single family dwelling. The wooden structure, rectangular or apsidal, was built on sunken floors. External inclined poles sustained a thatched roof. The floor-plan included a room with an enclosed porch. A hearth was set in the center of the room. The materials employed were timber and clay daub. The technique used was that of the intertwining of timber or poles with twigs reeds or branches.

The investigation also validates the notions prefaced at the beginning of this paper. Namely that apart from environmental factors, a lodging largely reflects the structure of the social unit which the house is built to shelter. Indeed, the Indo-European basic social unit is the family, and each family must have its own, however small, dwelling equipped with a hearth. The social organization, together with the inherited cultural traditions and the socio-economic basis of a group, plays a crucial role in building a shelter. These influences affect, not only the final form of a dwelling, but the choice of location as well. Indeed, most Indo-European settlements are fortified enclaves, often set in high places as opposed to the predominantly unfortified river valleys settlements preferred by the pre-Indo-European cultures.

Yet archaeology demonstrated that timber construction of above ground housing shows a continuity since the pre-Indo-European Neolithic. Indeed, it is not unthinkable that some terminology for wood construction could have been borrowed into Indo-European during the Corded Ware period. I am here referring, for instance, to the Proto-Indo-European root **treb-* which lends itself to such possibilities because of its troublesome phonology and because of its distribution. Specifically, PIE **treb-* 'building, dwelling place' is found only in Italic, Celtic, Germanic and Baltic (see Huld 1991:398). Nevertheless, what clearly separates pre-Indo-European local developments from the intrusive Kurgan elements is the transition between a communal longhouse, typical of the LBK culture, to the single dwelling typical of the Baden-Ezero culture. Evidently a social regrouping and even some stratification had taken place. The transition from large communal structures, to smaller individual ones is a feature duplicated also in the mortuary archaeological record. With the spread of Indo-European cultures, communal burial in large Neolithic tombs gave way to smaller individual burial structures (see Jones-Bley 1990).

With regard to social organization, it is worth noting that in designating the dwelling itself scholars find, in late Proto-Indo-

European, wide concordance in the basic terminology. Such terminology refers to the structure, to the household as a social unit and to the master that governed it. Indeed, as with the term 'house' in English, so does Proto-Indo-European **domAo-* 'house' refer to both the 'structure' and the 'family'. Tatpuruṣa compounds with Proto-Indo-European **domAo-* and Proto-Indo-European **pot-i-* 'lord', designate the patriarch. Thus, Skt. *dama-h* 'house' and *dam-pati-* 'master of the house', Gk. *δόμος* 'house' and *δεσπότης* 'house-holder', Lat. *domus* 'house' and *dominus* 'head of a household' and OCS *domŭ* 'house'. Proto-forms have also been reconstructed for the unit formed by several joint families: Proto-Indo-European **ueik-/ *uoik-/ *uik-* 'settle'. The o-grade form gives **uoik-o-* which refers to the physical construction and even stresses topographic clustering: Lat. *vīcus* 'village, dwelling cluster', Gk. *φῶκος* 'house, homestead of joint family'. The zero-grade root-noun **uik-* refers mostly to the social unit: Skt. *vīś* 'clan', Av. *vis* 'village community', Goth. *weihs* 'village, community' and OCS *vīsl* 'village'. Also reconstructed are titular heads of such social groupings as in Skt. *viśpāti-*, Av. *višpaiti-* 'head of the clan', Lith. *višpats* and Alb. *zot* 'lord' as well as Skt. *viśpātnī* and Alb. *zojë* 'lady' from Proto-Indo-European **uik(A)-pot-ni-A*. The reconstructed Proto-Indo-European vocabulary for 'house' then, represents the more general concept of 'house and home'.

It has long been recognized by Indo-European scholars that correlating the results of historical-comparative linguistics with the findings of archaeological research is a difficult task. Yet linguistic signs are a time-capsule, often retaining very archaic perceptions and concepts. Unravelling them can give us a fuller understanding of the culture that used them. This paper is only a preliminary report, a call for additional work. Much remains to be done, such as collating knowledge from literature, mythology and other sources. Though I am fully aware of the myriad of complexities that have become apparent from this kind of research, given the premises discussed above, I believe that a recognizable pattern should emerge as variations on a theme and a taxonomy of Indo-European architectural terms can be achieved. This type of classification will prove particularly useful to studies of lexico-cultural seriation aimed at establishing the time and location of Indo-European spread.

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The Pre-Germanic Substrata and Germanic Maritime Vocabulary

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The Germanic ethnogenesis

The geographical origin of the Germanic tribes is a noncontroversial issue. In the light of prehistoric data the Germanic homeland can be situated in the area of contemporary Jutland, southern Scandinavia and northern Germany. The Germanic languages were formed from northern Indo-European dialects and they underwent specific changes in their phonological, morphological and lexical systems.

On the other hand, the issue of Germanic ethnogenesis remains an unsolved problem, centering around the question of interference and convergence within Indo-European contacts, versus an alleged Proto-Scandinavian language substratum. Literature on this subject supports, in most cases, the substratum theory;¹ however, some well-known linguists — Julius Pokorny (1936) and Günter Neumann (1971) — prefer the contrary option and present solid arguments in favor of it.

¹ A non-Indo-European component in Germanic was first taken into consideration by S. Feist (1914), who mentioned a number of the German words with no established etymology, first of all terms connected with the sea (see below), names of some wild beasts and plants, and also non-decimal numerals (e.g. German *Mantel*, *Stiege*, *Schock*). See also Feist (1928; 1932). A. Meillet (1930) saw in the Germanic languages a non-Indo-European substratum similar to the pre-Celtic one. P. Scardigli (1960) included into non-Indo-European elements in Germanic above all: (1) strong expiratory stress; (2) consonant shift; (3) coexistence of the "strong" declension (an Indo-European archaism) and "weak" (regular) one for expressing non-Indo-European tendencies; (4) a considerable part of vocabulary (ca. 25%). See also Bednarczuk (1987a:42). The place of substratum in the theory of language contacts was recently discussed by Bednarczuk (1987b = 1995).

The problem of the consonant shift

It has been claimed that the consonant shift observed in some Indo-European languages occurred due to extralinguistic processes of convergence and interference and as a result of different substrata, e.g. by Güntert (1934:72), Scardigli (1960) and many others who claim the pre-Germanic substratum to be responsible for the Germanic consonant shift. The consonant shift can be described as loss of the characteristic Indo-European opposition between voiced and voiceless consonants /p:b, t:d, k:g/ through one of the following processes: (a) the obliteration of the opposition, as in the Tocharian languages, (b) the change to an opposition between strong (fortis) and weak (lenis) /p:p, t:t, k:k/, as in Hittite, which developed into (c) an opposition between aspirated and nonaspirated /p:p^h, t:t^h, k:k^h/, as in Armenian, and finally (d) realized as the opposition between plosive and fricative /p:f, t:ɸ, k:h/ attested in the Germanic languages.

The above hypothesis is supported by the occurrence of the consonant shift in the Indo-European periphery, i.e. areas of contact between different ethnic groups. Explaining the Germanic consonant shift by substratum theory meets serious chronological problems: according to archaeological evidence the process of Indo-European settlement upon the Scandinavian landmass was accomplished by ca. 1200 BC, whereas Celtic loans from fifth century BC underwent the shift which must have been an operative process at that time. Therefore, the shift must have occurred eight hundred years after the phenomenon which allegedly caused it. The questions seem to be 'is the consonant shift motivated by the substratum?' and in case of a positive answer 'what caused the temporal divergence?'

The Polish linguist Tadeusz Milewski (1968:50-51 and 1969:175-76) tried to explain this chronological divergence by pointing to different phases of the Proto-Germanic shift. According to this linguist, the first phase, /b:p/ > /p:p/, took place already in the twelfth century BC, and further phases occurred only in the fifth and fourth centuries BC. Furthermore, he suggests that "in Celtic loan words borrowed by the Germanic peoples in the fifth century BC, Celtic voiced consonants were identified with lenis sounds and voiceless with fortis, and together with this category of consonants, they underwent further changes."²

² *In den im 5 Jh. v. u. Z. entlehnten keltischen Ausdrücken wurden die keltischen stimmhaften mit den schwachen und die stimmlosen mit den starken*

Milewski's explanation, though theoretically possible, is unacceptable as it requires at least two additional assumptions which are not verifiable. The answer to the problem seems to lie elsewhere. According to Ludwik Zabrocki (1951), the consonant shift was caused by the processes of fortition and lenition. These processes appear in waves. After a period of fortition, resulting in the consonant shift, a period of articulatory and acoustic weakening occurred, resulting in lenition. Therefore, the chronological order in Germanic is the following: 1) the Proto-Germanic consonant shift (Grimm's law), 2) the Proto-Germanic lenition (Verner's law) and last 3) the Old High German shift.

The consonant shift in the language of the Indo-Europeans did not occur at the moment of meeting with the Scandinavian substratum but only when the strengthening wave reacted upon the substratum, which in turn, through processes of convergence and interference returned to the language of the newcomers. It may be alleged that the chronological discrepancies in the Germanic shift(s) occurred due to the weakening of the wave, which resulted in lenition. The occurrence of lenition which preceded the Proto-Germanic shift is attested by the voicing of Proto-Indo-European (Indo-Hittite) laryngeal phonemes (or rather voiceless fricatives) in medial positions (excluding the position after the accented syllable):

(1) Gmc. **taikuraz* m. 'husband's brother' (OE *tācor*, OHG *zeihhur*) < Proto-Gmc. *daigurás* < PIE **daiH₂wrós* (oxytonic AP) 'brother-in-law', cf. OIn. *devár-* (nom. sg. *devá*) m. '(younger) brother of the husband', Pashto *lewár*, Gk. *δᾱήρ* (r-stem) m. 'brother-in-law', Arm. *taygr*, Lat. *lēvir* m., Lith. *dieveris* m. (1 or 3 AP) 'brother-in-law', Latv. *diēveris* 'id.', Old Polish *dziewierz* m. 'husband's brother' (Illich-Svitych 1979:60, 137). The Indo-Iranian, Armenian and Greek data point regularly to the original PIE oxytone form **daiHwér*. The Balto-Slavic barytonesis is the result of accent retraction (Hirt's law).

(2) Gmc. **kwikwaz* adj. 'alive' (OE *cwic*, *cwicu*; OSwed. *kuikr*, OHG *quēh* and *quēk*, gen. sg. *quēckes*) < Proto-Gmc. **gwigwás* < PIE **gwiHwós* adj. 'id.' (oxytonic AP), cf. OIn. *jīváh* adj.; OIr. *biu*, *beo*, W. *byw*, *bew*, Bret. *beo* < Celtic **bīwós* adj. 'alive'; Lith. *gývas* 3 PA, Latv. *dzīvs*, Polish adj. *żywy* 'alive'. The oxytone accentual paradigm (AP) is safely attested in Old Indic, Celtic, Baltic and Slavic.

Lauten identifiziert und von der weiteren Entwicklung dieser Kategorien.

(3) Gmc. **nakwan-* m. 'ship' < Proto-Gmc. **nagwán-* < PIE **naHwón-* (with regular n-stem oxytonesis). The oxytone derivative is accentologically opposed to the original PIE form **náHus* 'ship' (barytonic AP), attested not only in Germanic (Old Norse *nór*), but also other Indo-European languages (OIn. *náuh*, Gk. *ναύς*, Lat. *navis*, Arm. *nav*).

The chronological discrepancies in the Germanic shift become fully justified after a careful analysis of the order in which phonological processes took place in Proto-Germanic. This order was the following: 1) the pre-Germanic lenition, 2) the Proto-Germanic consonant shift and 3) Proto-Germanic lenition.

If we accept this chronological order, there exist no further arguments against explaining the consonant shift as a result of the substratum influence. Since lenition cannot occur independently of consonant shift, the lenition process must have entered the pre-Germanic language through convergence and extralinguistic interference due to (language) contact. This fact confirms the existence of language substrata in the Germanic ethnogenesis.

The non-Indo-European and Indo-European substrata in Germanic

A critique of the non-Indo-European substratum was most thoroughly carried out by Julius Pokorny (1936/1968). Starting with the assumption that tribes settling outside the homeland show some of the features taken over from the preceding peoples, Pokorny did not find traces of non-Indo-European substratum in the Proto-Germanic language. At the same time, however, he argued for Hamitic substratum in Old Irish and Finno-Ugric in the Balto-Slavic languages. Pokorny admitted the existence of Finno-Ugric influence upon the Germanic languages; he limited it, however, only to Scandinavia and therefore opted in favor of its late origin. He explained the consonant shift and other processes which could be treated as results of a non-Indo-European substratum as effects of intralinguistic impulses (intralinguistic interference). Pokorny rejected the existence of non-Indo-European substratum in the Germanic languages and at the same time included the area of the Germanic ethnos into the Indo-European homeland within its maximal range, i.e. before its ultimate break-up.

Pokorny's views, though including interesting observations, miss some important generalizations. According to Polish historian Henryk

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Łowmiański (1963:45), Pokorny "does not take under consideration the possibility of Germanic contact with an earlier substratum, e.g. Indo-European, ... and not necessarily Finnic."³ Łowmiański does not exclude the possibility that Germanic speakers overlapped earlier Indo-European inhabitants who previously dominated non-Indo-European inhabitants. He therefore agreed that Pokorny could have been right in so far as there are no direct traces of non-Indo-European substratum.

Łowmiański's hypothesis concerning an Indo-European linguistic underlay, not taken into account so far, is confirmed by the existence of primary Indo-European substrata in other peripheral languages, e.g. not only in Greek (the so-called "Pelasgian" substratum), but also in Italic (Haas 1960), Celtic (Witczak 1986) and Balto-Slavic (Holzer 1989). We shall now analyze this hypothesis from the viewpoint of language contact theory.

It follows from the previous discussion that pre-Germanic lenition appears to be that first process in the superstratum (Proto-Germanic) language, although the very phenomenon of lenition is nominally a further phase of the consonant shift. The conclusion seems to be that the pre-Germanic lenition can be taken as evidence for prior fortition (shift) within the pre-Germanic Indo-European substratum. This substratum therefore, if we accept its existence, should possess a phonological system showing a shift-type development in comparison with Proto-Indo-European and Proto-Germanic.⁴ Presumably, the correspondence between the consonant systems of Indo-European, Germanic and the pre-Germanic (IE) substratum should be the following:

Indo-European	Germanic	pre-Germanic
*k *p *t	h f þ	k p t
*g (*b) *d	k (p) t	h (f) þ
*gh *bh *dh	g b d	k p t

miterfaßt (Milewski 1968:51).

³ Łowmiański uses the notion of "substratum" in the sense "language underlay," whereas in this paper "substratum" refers to all possible traces of the original language observable in the subsequent language (of the conquerors).

⁴ We can find a number of items in the Proto-Germanic vocabulary, most of

In light of the above facts, the characteristic feature of Indo-European substratum vocabulary in Germanic would be a double consonant shift. Furthermore, in analyzing substratum vocabulary the double shift must be the decisive factor in accepting the Indo-European substratal origin of a lexical item.

Summing up, I suggest the existence of three language layers in the area of Scandinavia, Jutlandia and Northern Germany, namely: a) a non-Indo-European substratum, b) a pre-Germanic Indo-European substratum, being a medium between an autochthonous (non-IE) people and the Proto-Germanic newcomers and c) Proto-Germanic (cf. also Witczak 1986:75-78 and 1992:84).

Historical outline of the substratal origin of Germanic maritime vocabulary

I would like to quote E. C. Polomé's words:

... there is no doubt that whichever way northern Europe was indo-europeanized, the new population initially constituted a mere *adstratum* or *superstratum* to a long-established set of peoples. When and why the language shift took place remains widely an open question, but one thing is certain: it did not take place without leaving clear traces of the prior language(s) in the lexicon [original emphasis] (Polomé 1990a:337).

The Scandinavian substratum influence upon the Germanic ethnos was first discussed by Sigmund Feist (1914). Having estimated that around thirty percent of Germanic vocabulary is of substratal origin,⁵ he concluded that Germanic maritime vocabulary is entirely

which demonstrate a double consonant shift, cf. the evidence for pre-Germanic Indo-European substratum, cited in the Appendix: 4, 5, 6 and 8.

⁵ See Feist (1914:88). Also Scardigli (1960) treats a considerable part of the vocabulary (25%) as the non-Indo-European element in Germanic, cf. Bednarczuk (1987:42-43). Similarly Zabrocki (1963:64), followed by Milewski (1968:51), who states that "circa 30% of the Germanic vocabulary was borrowed from non-Indo-European dialects of Scandinavia, especially words connected with the sea (cf. German *Strand*, *Klippe*, *Düne*, *Rache*, etc.), by reason of fact that the Indo-Europeans originally did not know the sea." [*Etwa 30% des Wortschatzes übernahmen die Germanen aus den*

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borrowed from non-Indo-European languages of Scandinavia. Feist (1914:88) connected this observation with the alleged continental origin of the Indo-Europeans who primarily did not know the sea. He presented a list of German words of substratal origin referring to coast life, ship-building, seafaring and fishing. He mentioned on the whole twenty-four nouns and only one verb (*schwimmen* 'to go by water'). Feist further observed that fish-names (with the exception of *Lachs* 'salmon' and *Walfisch* 'whale') do not have Indo-European equivalents, which supports the claim about their substratal origin.

Feist's list, repeated or extended by other scholars (e.g. Karsten 1928:135; Krahe 1935:38; Rosenfeld 1960:20; Tschirch 1966:24; Szulc 1991:58), was uncritically copied from one textbook to another and automatically gained credibility without any discussion. Little wonder, therefore, that Neumann (1971:86) stressed the necessity of a systematic and critical reanalysis of this list of items regarded so far as having substratal origin.

Forty-four items of maritime vocabulary in German have been assumed to be of substratal origin. Twenty-four are assumed by Feist himself: *See* 'sea', *Segel* 'sail', *Nachen* 'ship', *Kahn* 'ship, boat', *Kiel* 'ship' and *Kiel* 'keel', *Spant* 'rib', *Bord* 'board, deck', *Brise* 'breeze', *Hafen* 'port, harbor', *Damm* 'dam', *Reede* 'roads', *Ebbe* 'ebb', *Sturm* 'storm', *Zeit* (with the meaning *Gezeiten* 'ebb and flow'), *Fels* 'rock, reef', *Klippe* 'reef, cliff', *Strand* 'strand', *Geest* 'high and dry land', *Laich* 'roe', *Netz* 'net', *Reuse* 'bow-net, eel-pot', *Stange* 'mast', *Steuer* 'rudder' and the verb *schwimmen* 'to go by water, sail, boat'. Six items were added by Krahe: *Rahe* 'yard', *Düne* 'dune', *Haff* 'bay, creek', *Woge* 'wave', *Riff* 'reef' and the verb *hissen* 'to hoist (up)'. Four items were suggested by Rosenfeld: *Takel* 'tackle', (*das*) *Tau* 'cable, rope', *der Topp* 'top' and *Aal* 'eel'. Eight items were proposed by Tschirch: *Jolle* 'jolly-boat', *Boot* 'boat', *Schoner* 'schooner', *Mast* 'mast', *Gaffel* 'gafel', *Tran* 'whale-oil', *Sprotte* 'sprat' and *Watt* 'flat, shallow mudland'. Szulc added one other item: *Sund* 'strait'.

nichtindoeuropäischen Dialekten Skandinaviens, und zwar insbesondere irgendwie mit dem Meer im Zusammenhang stehende Ausdrücke (vgl. nhd. Strand, Klippe, Düne, Rache usw.), was im Zusammenhang damit steht, daß die Indoeuropäer ursprünglich das Meer nicht kannten].

An etymological analysis of Germanic maritime vocabulary

In an earlier paper published in a Festschrift for the late Adam Weinsberg, I have analyzed the origin of Germanic maritime vocabulary (Witczak 1993). First of all, I have collected words belonging to the Germanic maritime terminology, including all the items given by Feist (henceforth: F) and by his adherents (K - Krahe, R - Rosenfeld, T - Tschirch and S - Szulc). Second, I have tried to eliminate from this list words of doubtful Proto-Germanic origin (group A, e.g. German *Brise*, a borrowing from Spanish *brisa*) and words of Proto-Germanic origin which acquired their maritime meaning within separate Germanic languages (group B, e.g. German *Tran* T 'whale-oil', from Gmc. **tráhan-* 'tear'). As a result, we may eliminate eleven words (twenty-five percent) from the forty-four items suspected of being borrowed from a substratum source.

Group A includes five items, namely: German *Brise* F,⁶ *hissen* K, *Jolle* T, *Schoner* T and *Takel* R. Group B includes six items: German *Gaffel* T, *Gezeiten* F, *Kahn* F, *Stange* F, *Topp* R and *Tran* T.

The remaining thirty-three items can be divided in four groups. Group I includes native words inherited from the Indo-European proto-language: *Haff* K, *Hafen* F, *Düne* K, *Fels* F, *Riff* K, *Reede* F, *Boot* T, *Kiel* F (with the meaning 'ship'), *Mast* T, *Watt* T, *Bord* F, *Steuer* F, *Segel* F, *Rahe* K, *Netz* F and *Nachen* F (16). Group II includes specifically Germanic neologisms, created on the basis of inherited components and patterned after formations already existing in the Germanic tongue: *See* F, *Strand* F, *Sund* S, *Geest* F, *Damm* F, *Ebbe* F, *Sturm* F, *Woge* K and the verb *schwimmen* F (9). Group III includes two words representing presumably the Indo-European substratum in Germanic: *Kiel* F 'keel', *Aal* R (2). Group IV includes items of 'unclear' origin that can be suspected of non-Indo-European origin: *Klippe* F, *Spart* F, *Tau* R, *Reuse* F, *Laich* F and *Sprotte* T (6).

⁶ Likewise, I agree with Polomé, who, when criticizing the alleged substratum material gathered by Gijsseling (1987:286), correctly pointed out that "it hardly makes sense to project into a pre-Germanic 'substrate' a late Middle Dutch maritime term like **pte* (Du. *pijjekker* - NE *pea jacket* - a pilot's coat, presumably borrowed from Dutch to English)" (1990b:281). Polomé also adds that the substratum hypothesis will have to be rejected in some cases for chronological reasons as a result of an examination of the history of the relevant term, e.g. NE *plunder* (1990b:285).

Table I
Feist's List and its Verification

	A	B	I	II	III	IV	totals
1. Coast Life	0	1	7	6	0	1	15
2. Ship Building	2	3	6	0	0	2	13
3. Seafaring	3	1	2	3	1	0	10
4. Fishing	0	1	1	0	1	3	6

After taking into consideration this part of Germanic maritime vocabulary, which has never been considered as being borrowed from a substratum, I came to the conclusion (Witczak 1993:334) that of words forming the Germanic maritime vocabulary eighty-four percent are native, out of which fifty-nine percent are of Indo-European origin (group I), and twenty-five percent are Germanic formations (group II). This means that the Germanic knowledge of sea and seafaring is primeval (i.e. inherited from the times of the Indo-European community) and therefore I had to dismiss the claims about the substratum nature of Germanic maritime vocabulary.

Appendix

It is worth emphasizing that the alleged Indo-European substrata, attested in all the Indo-European languages of the Northwest group (Italic, Celtic, Germanic, Baltic and Slavic), present a very similar phonological development, namely:

- (a) PIE *tenues* > *mediae* (*aspiratae*),
- (b) PIE *mediae* > *tenues*,
- (c) PIE nasals (**n*, **m*) are deleted before consonants,
- (d) PIE **w* disappears before **y* and front vowels (attested in pre-Italic, pre-Germanic, pre-Celtic),
- (e) PIE **o* > **a* after labial **w* and **m* (the development attested in pre-Celtic and pre-Italic, but assumed for IE substrata in Germanic, Baltic and Slavic, where these vowels merged together and this latter process was probably due to a substratum influence), and
- (f) PIE labial stops yield **-m-* in intervocalic position.

These phonological similarities of the substrata can be demonstrated on lexical evidence.

Evidence for the pre-Germanic IE substratum

4) Gmc. substrat. **hwelpaz* m. 'puppy, young dog' (cf. ON *huelpr*, OE *hwelp*, OS *hwelp*, OHG *welf*, NHG *Welf*) < PIE **g^welbhos*, cf. OIn. *garbhaḥ* m. 'Mutterleib, Leibesfrucht, Embryo, Neugeborenes', Av. *garəša-* 'Mutterleib', Hitt. *ḫwelpiš* adj. 'newborn, young', Gk. *δελφᾶξ* '(young) pig' (Witczak 1986:77; 1992:81-82). The 'double' consonant shift proves the substratal origin of the Germanic word for 'puppy, young dog'. The genuine Germanic words denote 'young cow' or young sheep', cf. Gmc. *kalbiz* n. 'calf' (OHG *calb*, pl. *chalbir*, *kelbir*), **kalbaz* n. 'calf' (OE *cealf*, pl. *cealfru*; OS *kalf*), **kalbaz* m. (ON *kalfi*), **kalbōn* f. 'id.' (Goth. *kalbō*) and also **kilbuz* n. 'sheep' (OHG *kilbur*; OE *cilfor-lamb*), see Pokorny (1959:473) and Mann (1984-86:354-f.) — (b).

5) Gmc. substrat. **ār(h)witō* f. 'pea' (ON *ertr* f. pl., OS *erwit*, *erit*, OHG *arwiz*, *araweiz*, NHG *Erbse*) < IE **ōrg^windhā* f. 'a kind of leguminous plant' (Witczak 1986:78), cf. especially Gk. *ἐρεβίνθος* f. and *ἐρεβίνθος* m. 'chick pea, *Cicer arietinum*' and OIr. *orbaind* m. 'grain, cereal' (as if from IE **org^windho-*), cf. Lat. *ervum* n. 'a kind of cultivated vetch, *Vicia ervilia*' (Pokorny 1959:335) — both (b) and (c).

6) Gmc. substrat. **kēluz* m. 'keel' (ON *kjōlr*, Du. *kele*, OE *scipes cele* 'rostrum navis', MHG *kele*, NHG *Kiel*) < IE **kelH-*, cf. Arm. *k'eti* 'helm, rudder', *k'etanem* 'to drive, navigate', ON *hjalmr*, *hjaln-vōlr* 'rudder-stick', OE *helma* 'tiller', see Blažek (1991:129f.) — (a).

7) Gmc. substrat. **ēlaz* m. 'eel' (ON *all*, OE *æl*, OFris. *ēl*, OS *āl*, Du. *aal*, OHG *al*, NHG *Aal*) < IE **wēlos* m. 'worm, snake', cf. TA *walyi* pl., TB *yel* (pl. *yelyi*) 'worm', Oss. (Iron) *wallon* 'rainworm', Baluchi *wal* 'worm'. As the other western Indo-European languages commonly derive the term for 'eel' (Lat. *anguilla*, OPrus. *angurgis*, Pol. *węgorz* and so on) from the word for 'snake' (cf. Lat. *anguis*, OPrus. *angis* and Pol. *wąż*), it is quite plausible to connect the pre-Germanic word **ēlaz* with the similar semantically root **wēl-* 'worm' — (d).

8) Gmc. substrat. **kidia* n. 'kid, young goat' (ON *kid*, Norw., Swed. *kid*, OHG *kizzi* < *n*>, NHG *Kitz*) < **kīpiā* < IE **ghāidyo-* n. 'kid, (young) goat', cf. Lat. *haedus* m., Sabine *fedus* m. 'kid', Shughni *gidik* '(young) ram'. The native Germanic word denotes 'goat' rather

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than 'kid', cf. Goth. *gaits*, ON *geit*, OE *gāt*, NE *goat*, OS *gēt*, OHG *geiz*, NHG *Geiß* (all from Gmc. **gait* < *i* > *z* f.) — (b).

9) Gmc. **ikwernan*- m. 'squirrel' (ON *ikorni* m., Norw. *ikorna*) < PIE **weH₁wérnaH₂* f. 'id.', cf. Gaulo-Latin *viverra* f., W *gwiwer*, Bret. *gwiber*, Gaelic *fedrag* 'squirrel'; Lith. *vėveris*, *voveris* 'id.', OPrus. *weware*; Pol. *wiewiórka*, Czech *veverka* (< Sl. **věverika*). The substratum term **ikwernan*- was later transformed into **aikwernan*- 'id.' (cf. OHG *aihhurno*, Du. *eekhoorn*, OE *ācweorn* < *a* >, Swed. *ekorre*) by a folk etymological conflation with Gmc. **aik*- f. 'oak' (ON *eik*, OE *āc*, OS *ēk*, OHG *eih*) — (d).

Further evidence for the IE substratum influences upon the northern IE dialects

10) PIE **o* > **a* (the identification of both these vowels is firmly attested in Germanic, Baltic and Slavic, and probably it is the result of substratum influences) — (e).

11) The PIE ending of instr. pl. **-Vbhi(s)* > **Vmis* and that of dat.-abl. pl. **-Vbhos* > **Vmos* (the process can be attributed as a substratum influence upon Germanic and Balto-Slavic) — (f).

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Culture and Mythology

Marija Gimbutas: The Investigator of Baltic Mythology

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On her visit to Lithuania from far-off California in the spring of 1993, Marija Gimbutas expressed in her talks at the meetings with the Kaunas and Vilnius public that it was thanks to her deep knowledge of Lithuanian customs, folklore, religion and mythology that she managed to decipher "the language of goddesses" and solve the mysteries of Old European culture. She said that each time she came back to Lithuania she was endowed, like Antaeus touching mother Earth, with new strength and ideas for her future works. Unfortunately, the verdict of her beloved goddess of fate, Laima, was severe and unrelenting. This time Marija Gimbutas was not able to fill herself with new strength in her homeland. On February 2, 1994, her mind and lively imagination ceased to mark new cultural horizons in Old Europe. This distressing loss stimulates our interest in the life and works of our compatriot and encourages us to take steps to sum up her life's work. Its full estimation needs a longer time and a closer acquaintance with her abundant heritage, manuscripts and printed material. At the moment our aim is to survey only one, although not so broad, sphere of the investigator's activity, namely, her works on the religion and mythology of the Balts in general and Lithuanians in particular.

Gimbutas considered Lithuanian religion and mythology inseparable from folklore which attracted her attention in the years 1931-1938 during her studies at the Aušra Girl's School in Kaunas. The works of Jonas Basanavičius were for her the greatest authority on the subject, as he, and she herself later, endeavored to trace in folklore the reflections of the Lithuanians — their archaic way of life, world-outlook, religion and mythology — and used it as one of the most reliable sources for mythological, archaeological and historical studies. The studies of linguistics, ethnology and archaeology which she started in 1938 at the Faculty of Humanities of Vytautas Magnus University in Kaunas (transferred to Vilnius in 1940) helped Gimbutas to make the acquaintance of another then famous folklorist, Jonas Balys, who was also mostly interested in mythological folklore and used it as the basis

for the description of major Lithuanian mythic images: *vilnias* (devil), *Perkūnas* (thunder god) and *aitvaras* (goblin). The above-mentioned scholars, Basanavičius in particular, strongly affected the spiritual orientation of the future researcher, influencing her choice of the field of study and research and to some extent even her methods of analysis. That influence undoubtedly led her to choose folklore and mythology as her second specialty (beside archaeology). Leaving occupied Lithuania in 1944, Gimbutas studied ethnology and the history of religion, along with archaeology, at the universities of Heidelberg, Munich and Tübingen. Starting her professional career at the University of California, Los Angeles in 1963, she lectured on Indo-European archaeology, Baltic languages, culture and mythology.

The very first scientific article by Gimbutas, "The Traits of the Lithuanians of the Vilnius Territory in Life and Folklore," which she wrote while at the Vytautas Magnus University, was related to ethnology and folklore. And although the subject of her diploma paper and her doctoral thesis was purely archaeological, *The Burial of the Dead in Prehistoric Lithuania*,¹ some of the problems raised in them are closely related to religion and mythology, and the methods of analysis employed are typical of that particular field of study. The paper does not merely distinguish the types of burial places, giving the descriptions and dating of the finds. On the basis of these finds and numerous data of folklore, ethnology and written mythology the ancient burial rites of the Lithuanians are reconstructed, their parallels with the burial customs of other nations are traced out and the origin of the cult of the souls is explained. These first papers marked the direction and character of the scholar's future research work. Later analyzing the archaeological finds of either the Balts or Old Europeans, Gimbutas endeavored to reveal the spiritual world, social structure, world outlook and mythology of the people who had left behind those "signs." Her broad and far-reaching generalizations are based on the data obtained in the study of not only archaeology, but also folklore, linguistics and mythology. Therefore, she is justly considered to be the initiator (Andrašūnaitė 1993) of a new branch of science: archaeomythology. In a great many of her widely acknowledged

¹ Two articles from her dissertation were published in the Lithuanian press (Gimbutienė 1943a and 1943b). The entire dissertation, translated into German was published in Germany (Gimbutienė 1946).

works, she reconstructed the Old Europeans' way of thinking, world outlook, religion and mythology. Lithuanian (Baltic) mythology receives due attention in Gimbutas' archaeomythology.

The study "Ancient Symbolism in Lithuanian Folk Art" (1958) published in English, which Gimbutas wrote in America with great imagination and inspiration and which might truly be called an excellent introduction to symbolism in Lithuanian folk art, is even more oriented towards ancient Lithuanian religion and mythology. The greatest merit of this study is the author's ability to comprehend the system of symbols and the religious images represented by them. All Lithuanian symbols are treated here as an interaction of two poles (sky and earth, male and female) which starts and sustains life, as well as stimulating fertility and productivity, while the aim of the symbols and of the "natural, pantheistic" religion is viewed as safeguarding the vital powers which are "the very the basis in the struggle for existence" (Gimbutas 1958:122). Another merit of Gimbutas' work is her apprehension of the diverse character of the object under investigation and its analysis in a broad historical and geographical context. The author's attention is focused on symbols both executed in solid material (forged, carved, hewn, woven and painted) and represented by songs, dances and various rites. Besides, coming within the scope of this work are not only symbols described in the nineteenth to the twentieth centuries, but also the most archaic ones, familiar to us from a variety of archaeological and historical sources. In her attempt to describe the meaning and the origin of these symbols the author daringly compares them with the symbols existing in all of Europe, Southeast Asia and North America, viewing them in a deep historical perspective from the Stone Age to this day. This broad and deep vision makes it possible for the author to draw essentially correct conclusions that symbols are "inseparable from the entire religion's rite," that "they are closely inter-related with those ideas that our ancestors endeavored to embody in their symbolic art" and that "symbolic art, having similar signs, embraced vast distances in time and space. Over the millennia, groups of symbols of the same system found repetition and reconstruction in places of vast distance" (Gimbutas 1958:124).

And yet, strongly influenced by the still current theories of the migration of culture and especially its separate forms (e.g. folklore) the author maintained that agriculture was introduced into Europe from the Near East in the fourth millennium BC. The seeds of symbolism sprouted in all parts: the Balkans via the Aegean Sea and farther on

into Central Europe and Eastern Europe via the Caucasus (Gimbutas 1958:125-126). According to her, this symbolic art reached the Balts together with the development of agriculture and stock breeding at the beginning of the second millennium BC. Gimbutas would hardly have persisted in this opinion a couple of decades later after becoming more familiar with the culture of Old Europe and embracing the greatly increased radiocarbon dates which showed that some of the symbols had already flourished there long before the fourth millennium (see, for example, Gimbutas 1982).

Gimbutas could afford to devote even more attention to Baltic and Lithuanian mythology when she started lecturing on Baltic mythology at the University of California, Los Angeles in the 1960's. Her study *The Balts* (1963) presented a generalized picture of Baltic religion. The major Lithuanian gods were characterized in her popular article "Fragments of Lithuanian Mythology" (Gimbutienė 1964). The image of the Baltic celestial being *Dievas* (god) was outlined in her critical feature on Haralds Biezais' 1961 book *Die Gottesgestalt der Lettischen Volksreligion* (Gimbutienė 1963). Several of her articles were devoted to the Lithuanian Velnias (Gimbutienė 1970 and Gimbutas 1974) and the thunder-god of the Balts and Slavs Perkūnas (Perun) (Gimbutas 1973).

The above mentioned works are marked by a traditional approach to the religion and mythology of the Balts.

In Gimbutas' view, the chief source of Lithuanian mythology is Lithuanian folklore which abounds in mythological elements. But it is not, according to her, the only source, because "everything archaic and available in folklore does not supply sufficient material potential enough to reconstruct a more general picture of Lithuanian mythology. One needs sound data from the fields of history, comparative linguistics and comparative mythology" (Gimbutienė 1964:7). As for Lithuanian mythology, Gimbutas regards it as being Indo-European, archaic and allowing of parallels with the religion of the Vedic period. Therefore, characterizing the chief gods of the Lithuanians, she mostly compared them to the gods of other Indo-Europeans: the Indians, Greeks and Germanic tribes.

The presentation of Baltic religion in the study *The Balts* is carried out along the traditional lines by supplying descriptions of the temples, priests, burial rites, the conception of afterlife, the worship of trees, water, stones and fire and the major gods and goddesses. The estimation of this religion itself is traditional too, even though the

interpretation of many things seems to be different as compared with the still popular concept of the positivists, who view Baltic religion as being "natural" and "primitive." This study struck an innovative note because it dealt with the evidence pertaining to Baltic temples obtained by Pëtr Tret'yakov (1958) in the environs of Smolensk. It also focused on the major Baltic gods and their relations with other Indo-European gods, providing a more accurate and detailed picture of the nether world — both the community's "hill of the dead" located nearby and the remote paradise stretching beyond the mountains and waters — and a dead man's soul. It even contained some references to the trees of life and cosmos (the world), so popular in Baltic religion.

The article "Fragments of Lithuanian Mythology" by Gimbutas sounds like a polemic against the positivists who maintained that the Lithuanians did not have gods of the highest rank, and if they did, it was only Perkūnas. Here the author "freely (without references to written sources) defines major Lithuanian gods, their importance, function, forms and character, applying for songs and similes from other mythologies as illustrations" (Gimbutienė 1964:7). Described in this article are the same gods and goddesses as in *The Balts*: Dievas — God of the Heavens, Dievo sūneliai (sons of God), Laima, Saulė (the Sun), Kalvis (the Smith), Perkūnas, Žaltys (grass-snake), Bangpūtys (god of fields) and Žemyna (Mother Earth). The article suggests that the "forms and functions of gods revealed in the religions of Indo-European peoples conform to the archaic, or Proto-Indo-European social structure, namely, the three major classes: those of the rulers, warriors and land-tillers" (Gimbutienė 1964:7). No attempt is, however, made to reveal what social classes the Lithuanian gods are to be associated with. This problem is raised later, in the course of the preparation for print of the Lithuanian edition of *The Balts* in 1985.

Gimbutas' articles devoted to the Lithuanian Velnias as well as the Lithuanian and Slavic Thunder god Perkūnas (Perun) are of a generalizing rather than analytic character. Making no attempt to analyze the abundant folklore or the linguistic and historical materials pertaining to these mythical personages or to evaluate the opinions put forward by other scholars, it aims at merely pointing to these personages' main features, using one or two examples from folklore or language as illustrations and a few assertions by some of the most outstanding scholars to support the point.

The description of the Lithuanian Velnias centers around his features testifying to his divine nature and also those that have parallels

with such important gods of other Indo-European nations as the Indian Varuṇa, the Slavonic Veles/Volos, the Germanic Oðinn and Ullr and the Greek Hadēs and Hermēs. Pointed to as the essential traits of Velnias are his strength, shrewdness, clairvoyance, love of music and dancing, contact with the dead and animals, richness and fecundity. The article suggests that Velnias was one of the very important pre-Christian gods, and "a god of fecundity (happiness), wealth and cattle and at the same time a god of the nether world and the dead" (Gimbutienė 1970:137 and Gimbutas 1974:92). Dievas (God), Perkūnas and Velnias formed the main trinity of the Baltic gods.

Analyzing the image of Perkūnas, the author focuses on his relations with oaks, stones, axes and fire, as well as its functions as the fructifier and cleanser of the earth and the fighter against Velnias. The animals of Perkūnas are the goat and the bull, its birds are the cuckoo, the pigeon and the snipe (Gimbutas 1973).

Having investigated a large number of archaeological monuments in Europe and having familiarized herself with the spiritual world, the world outlook and ideology of Indo-Europeans as well as of the inhabitants of Old Europe, Gimbutas took an unprejudiced look at Baltic religion, trying to trace out what was inherited from Old Europe and what from the Indo-European culture. This problem was first raised in the Lithuania edition of *The Balts* in 1985.² Dealing with the same fields of religion and mythology as the English publication, this edition devotes much more attention to gods and goddesses which are much more numerous than in the 1963 edition, and their description is more detailed. And, what is more important, they are divided into two groups: 1) deities (mythical beings) inherited from "matricentral Old Europe" and 2) gods and goddesses of Indo-European descent. The beings inherited from Old Europe are further subdivided into basic and

² True, the idea of the antiquity of some Baltic female deities of life and death and their possible links with the major female deity — the giver of life, and death, the taker of life, was already expressed in the article "Goddesses of Light and Night in Lithuanian Mythology" (1976:173-74). These goddesses are considered to be more archaic than the male deities Perkūnas, Dievas and Velnias. They are not, however, assumed to have their origins in the mythology of Old Europe, as the male gods — in that of the Indo-Europeans. This, as some other articles by Gimbutas, is marked by the tendency to systematize, generalize and bring to the foreground those traits of Lithuanian deities which would make it possible to join them into bigger groups.

secondary. The basic begins — life giving and life taking beings — were said to be three: Laima, the goddess of Birth and Fate, Ragana, the lunar goddess of death and rebirth and Žemyna, the goddess of the fertility of Earth. Laimas' incarnations were the cuckoo, the owl, the titmouse, she-elk and the bear; those of Ragana being the toad, the goat, the mare, the crow, the magpie, the hedgehog, the pike and some other fish. The incarnations of Žemyna were a handful of earth, stones, rivers, lakes, trees, the tree of life and the mountains. Mentioned as Laima's assistants are Giltinė — death, Laima's sister, Laima-Dalia — the giver and taker of material goods, Marša — Laima of cows, the goddess of the birth of calves. The secondary deities belonging to the sphere of Laima and Ragana are Laumė and Austėja. The sphere of Žemyna includes Vaižgantas, Rūgių Boba (Dame of Rye), Medeinė and Giraitis, Lazdona, Žemėpatis, Žemininkas and Puškaitis (Gimbutienė 1985:160-1).

In Gimbutas' opinion, the basic goddesses inherited from Old Europe are very archaic, "having emerged in pre-historic times," while their transformations into water, fowl, snakes, she-elks and bears might date back to the Lower Palaeolithic. The deities of the fertility of the Earth are supposed to have formed in later times, "most probably, with the establishment of agriculture" and "the deities inherited from Old Europe are said to be related to earth and water,"³ while those from the Indo-Europeans — mostly to the sky, the celestial bodies and phenomena: light, sun, stars, moon, thunder" (Gimbutienė 1985:160-1). As the Indo-Europeans were warriors and stock-breeders, they were also pictured "armed and on horseback or related to other animals and beasts: bulls, cows, he-goats and wolves" (Gimbutienė 1985:149).

The Baltic gods of Indo-European origin are classified by Gimbutas according to the principle proposed by the French mythologist G. Dumézil: according to what social classes they are associated with: rulers and priests, warriors and the herdsmen and land-tillers. The first social class is related to sovereign gods, the

³ Some of the mythological material used in the Lithuanian edition of *The Balts* (inherited from Old Europe) was published by Gimbutas in the article "Goddesses and Gods of Old Europe in Lithuanian Mythology" (1984) which appeared almost a year before *The Balts*, as the publication of the latter was delayed. The gods and goddesses are classified and evaluated here in the same way as in *The Balts* only more parallels with European deities are drawn.

second one to warriors, the third one to gods of secondary importance. Dievas and Velnias (Velas) are regarded by Gimbutas as the Baltic sovereign gods of the first class, Perkūnas — a god of the second class (warriors), Aušrinė, Dievo sūneliai (sons of God), Saulės dukrytės (daughters of the Sun), etc. belonging to the third class (Gimbutienė 1985:149).

The same system of describing the Baltic gods and goddesses is applied by Gimbutas (1989). Here this system is applied with even more precision, more information from written sources and from folklore material being used to characterize separate deities. The deities inherited from Old Europe are subdivided into two groups: 1) lunar and water deities of life and death belonging to the sphere of Laima and Laumė-Ragana and 2) chthonic (those of earth and plants). Beside the above-mentioned chief deities the first group also includes Snake, Austėja and Bubilas, Gabija, Giltinė, Aitvaras, Medeina and Žverūna, Žemėpatis, Žemininkas, Lazdona, Puškaitis, Kaukas, Javinis and Vaižgantas (Gimbutienė 1989:34). The gods of Indo-European origin are divided in the same fashion as in *The Balts* except that Gabija and Gabjaujis are here classified as being of Old European descent (Gimbutienė 1989:34).

The article "Baltic Mythology" (Gimbutienė 1989) is an extended and edited part of the chapter "Features of Religion and Mythology" from the Lithuanian edition of *The Balts* dealing with gods and goddesses. This seems to be Gimbutas' major work on Baltic mythology which sums up all the factual and theoretical knowledge obtained throughout the author's life, thus reflecting her most complete view on the subject.

The search for the deities of Old Europe in Baltic, especially Lithuanian, mythology initiated by Gimbutas marked a new stage in the investigation of Baltic mythology. The classification of the Baltic deities according to their origin proposed by the author is quite fruitful, even if requiring great effort and erudition. The general characteristics of the deities of both Old Europe and Indo-European origin are precise enough to reveal their main traits. If we were to further analyze the traces of Old European and Indo-European cultures in Baltic mythology with a view to improving the Gimbutas classification of Baltic deities, however, it would be necessary to take into account certain peculiarities of the author's reasoning and of her method of investigation which have determined the results of the research in question. Endowed with a strong sense and power of

definition and systematization, Gimbutas presents to us a bird's eye view of Old European and Baltic mythology as well as the entire culture and correctly outlines the general cultural and mythological contours; she does not always succeed in singling out their separate parts. Her assertions are usually declared rather than proved, which makes them difficult to verify. Thus the reader has either to accept or reject them, trusting either Gimbutas' or the reader's own intuition and erudition.

Statements provoking dispute are fairly common in Gimbutas' works devoted to Lithuanian (Baltic) religion and mythology. They do not, however, diminish the value of those works or obscure her innovative observations and her new approach to Indo-European mythology. Her innovative search for the substratum of Baltic mythology is certain to inspire and provoke to dispute many a generation of researchers into this mythology.

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Concepts of Sacrifice in Later Prehistoric Europe

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This paper examines the phenomenon of sacrifice as one aspect of ritual behavior in later Bronze Age and Iron Age temperate Europe. Two fundamental principles of sacrifice are distinguished, namely giving and separation. These two principles may be applied to all categories of sacrifice. It is a basic tenet of this paper that the concept of sacrifice pertains not only to humans and animals but also to inanimate objects, which are more usually described as votive offerings. This paper argues that there is no fundamental difference in function between the gift of a cow or horse and that of a weapon or shield. What is important in all instances is the value of the sacrifice to the sacrificer.

The concept of ritual

Before examining the phenomenon of sacrifice as one specific aspect of ritual, it is useful to look at the definition of ritual behavior in general. What do we, as archaeologists, mean by "ritual"? Why do societies indulge in ritual behavior? There are certain factors which contribute towards the establishment of a framework for ritual behavior. Ritual may perhaps be defined as habitual, apparently non-practical patterns of activity or performance, which run along very precisely controlled lines and which are transmitted as tradition through time. The term "ritual" implies formalized, repetitive action, that very repetition imbuing the act with sanctity. Such behavior cannot easily be explained or comprehended by outsiders. In the case of ancient ritual, it is even harder for modern scholars to grasp the underlying thought processes expressed by such actions.

There is an apparent paradox concerning ritual behavior. It is at the same time special and commonplace. In both ancient and many modern traditional societies, ritual is central to everyday life, part of it and is in no sense a marginal, set apart activity. We may cite the Iban of modern Borneo (Beavitt 1989), whose complex rituals are performed on the verandahs of their houses and the physical remains of which are

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indistinguishable from secular butchery and cooking debris. On the other hand, within the context of normal life, ritual is "other"; it is special, with particular formulae of behavior which may be quite precise. Ancient Greek blood sacrifice, for instance, involved highly ritualized killing, with subsequent collective consumption of the flesh according to strict rules (Detienne and Vernant 1989). If we perceive ritual as being the mechanism by which the supernatural powers are reached, communicated with and controlled, then a formalized behavior pattern may well be essential because there is, to an extent, magic involved.

In recent years, archaeologists have tended to swing from one extreme to the other in their attitude towards the perception of ritual activity. Sometimes it is fashionable to keep well clear of any ritual interpretation of a site simply because it is all too easy to fall into the trap of creating a rag-bag of ritual into which is dumped every peculiarity of a site which is difficult to comprehend in functional, practical terms (Merrifield 1987). Conversely, there are trends — and I think we are experiencing this now — to interpret a great deal of behavior as ritual. For example, there is a school of thought which argues for a ritual explanation for much of what is apparently functional behavior in the British Iron Age. So what appears at first glance to be a pit or ditch full of rubbish may be rescrutinized and reinterpreted as nothing to do with random rubbish disposal but rather as an elaborate system of ritual involving symbolic space, communication with the supernatural and so on (Hill 1989). The argument here is that we must be wary of interpreting the evidence from later prehistoric Europe from the viewpoint of our own modern experience. What may appear to us mundane may in fact represent profound thought-processes.

From questions of identification of ritual expression, we may turn to the reasons for it. If we are trying to interpret the behavior of a past society, particularly one which cannot communicate to us in a written archive, we can only suggest motives. We cannot even assume that ritual behavior is always linked to the sacred and the divine. Ritual is a means of communication between humans and supernatural forces, but it may also be a method of conveying messages between humans: communities, groups or individuals. It is a natural human instinct both to construct a supernatural world and to try to make links with it. The powers of the supernatural may be regarded as elements which require to be harnessed, controlled and persuaded to act for

rather than against humankind. In addition to the need to contact the spirit-world, ritual has another purpose: ritual behavior can be an emotive thing, a stimulus or catalyst which may provoke further behavior, a religious experience such as a trance, vision or ecstasy.

Concepts of sacrifice

What exactly is a sacrifice? Is it the same as a votive offering or does it have a different function? To me the basic concept governing the identification of a sacrifice is the value set upon the item sacrificed to the community or the individual doing the sacrificing. This value may have nothing to do with economic factors but may be purely symbolic. A sacrifice may be animate or inanimate; it must be associated with the idea of giving to the supernatural world and of separation from the mundane world. Giving may have a number of functions: it may be requesting something to happen or not to happen; it may be a response to a crisis; it may be propitiation or appeasement for something which it is perceived may offend the spirit-world; it may express a rite of passage; or it may be thanksgiving — for a successful battle, a good harvest, a healthy child, a satisfactory business transaction or political alliance. Thus, for me, a votive offering is one aspect of sacrifice. The other main criterion for a sacrifice is separation. For a gift to the Otherworld to be successfully transferred thereto, it is important that it be symbolically or physically removed from the “real” world. This may be done in a number of ways: it may be buried in the ground and thus becomes invisible and inaccessible, it may be cast into water or marshy ground, which performs the same function, or it may be enclosed within sacred space, the enclosure acting as a sacred barrier protecting what is inside. Alternatively (or in addition), the object itself may be treated in such a way as to defunctionalize it, thus effecting separation. This can take the form of ritual damage or breakage, of making an object from materials unsuitable to its practical use or of miniaturization, the production of model objects to represent those of full size. Both these concepts of giving and separation may be applied to sacrifice in later prehistoric Europe.

The evidence for sacrificial activity

The principles of ritual and of sacrifice outlined above are widely applicable in time and space. There may be considerable commonality between cultures and communities in terms of concepts of

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sacrifice, although the expression of these concepts and the beliefs underpinning them may vary considerably. Having presented a framework for the study of this aspect of ritual behavior, it is now my intention to examine some examples of sacrificial activity in Britain and Continental Europe in the first millennium BC.

The perception of sacred space is important for understanding the nature of sacrifice. The placing of a sacrificial deposit in an inaccessible spot, such as a lake, marsh or pit, fulfills the two rules of giving and separation, as we have seen. Inanimate objects — often high-prestige, martial items — or the bodies of animals are often positioned within a symbolic barrier between worlds, both to render them appropriate as a spirit-gift and to sever their ties with the earthly world. Another means of acknowledging the liminal processes associated with sacrificial gifts is by ritual damage, the deliberate breakage of an offering the purpose of which is, once again, to send it from one world to another.

Objects

The most likely and obvious places to deposit gifts to the gods are in designated sacred space, whether this took the form of constructed shrines, open-air enclosures or natural features which were considered numinous.

The deposition of precious, prestige and frequently military objects in watery contexts is well-documented in later prehistory, e.g. (Bradley 1990 and Fitzpatrick 1984); rivers, lakes and marshes all received high-status material in the form of weapons, shields, cauldrons, harness- or chariot-fittings and other objects generally associated with warrior-élite groups. This kind of deposition, exemplified at such lake sites as Llyn Fawr in South Wales and Llyn Cerrig Bach in North Wales, is the result of complex behavior which may have involved not only sacrifice but also display, conspicuous consumption, the communication of wealth and security and even perhaps the deliberate removal of valuable objects from circulation in an aristocratic manipulation of resources. Incidentally, these same factors may also apply to high-status grave goods which were not necessarily the belongings of the dead but perhaps also display opportunities for the survivors. One factor in Late Bronze Age deposition is exoticness, which may have been important for the potency of the offerings. The same may have been true of the Llyn Fawr deposit, which dates to about 600 BC, which contained antique

cauldrons and exotic bronze imports from Central Europe (Savory 1976). We need to pose the question as to what of the non-élite groups. Are we not recognizing the offerings of ordinary people which took the form, perhaps, of organic material which has not survived?

Deposition in water is an effective means of separation, but is there more to it than that? We know both from Romano-Celtic evidence and from the later vernacular myths of Ireland and Wales that water was not only considered as a numinous life force but also represented the gateway to the spirit world, perceived by the writers of these early legends as a mirror image of earthly existence. Marshes represent something different again: they share the inaccessibility of water but, in addition, they possess the properties of ambiguity and danger, being seemingly benign but capricious and perilous. These qualities may have added to the sanctity and numinosity of such places (Green 1992b:223-24).

Llyn Cerrig Bach on the Island of Anglesey is a striking example of what must be a sacrificial deposit of considerable significance (Fox 1946; Lynch 1970:249-77; Green 1994:22-25). The finds come from the edge of a bog or lake at the foot of a sheer rock cliff, a good vantage point for casting in offerings. The hoard consists of a rich deposit of bronze and iron work, which spans the period from the second century BC to the mid first century AD. The uncorroded state of the metal indicates both that it was submerged immediately it was thrown in and that it did not spend centuries lying in the open air before its deposition. The implication, therefore, is that the deposit was formed by repeated offerings over a long period of time rather than by the accumulation of gifts over a long period and their subsequent deposition as a single religious act. More than 150 objects have been recovered from the site, including weapons, trumpets, chariot fittings, horse-harness, cauldrons and two slave chains, almost all high-prestige, élite material. The presence of cauldrons is interesting because these objects recur as offerings in water on many later prehistoric sites. Several come from the very late Iron Age in Scotland: at Blackburn Mill, one cauldron had been deliberately inverted over another, and at Carlingwark Loch, a cauldron full of metalwork had been cast into the marsh as a votive gift (Green 1986:145-47). The controversial Danish Gundestrup Cauldron is one of many Scandinavian finds: it comes from a bog, although its immediate provenance was dry (Kaul 1991:657-59; Taylor 1992:66-71).

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Sacrificial objects also turn up in dry ritual contexts, notably sanctuaries. Space permits me to look only at two examples, both from late Iron Age Britain. One is Hayling Island, a small wooden circular shrine of first century BC date which was set within a rectangular palisaded courtyard. It was this open space that produced the offerings rather than the shrine itself: these consisted of high-status items such as tankards, currency bars, weapons and horse gear accompanied by animals (Downey, King and Soffe 1980). The other site of great interest is Harlow in Essex, which consisted of a circular Iron Age sanctuary underlying a rectilinear temple of Roman date. Many of the offerings here were coins — more than five hundred of them — which have been found in positions which suggest that they may have been placed around cult objects such as images of deities or were perhaps suspended from the roof of the building and deposited only when the structure collapsed. There is also a suggestion at Harlow (and perhaps elsewhere) that deliberate and possibly symbolic archaism may have been involved in the selection of coins for deposition and that many pre-date the shrine itself (France and Gobel 1985; Haselgrove 1989).

Two other phenomena concerning inanimate offerings need to be examined. First is ritual breakage, the deliberate snapping or bending of an offering, thereby rendering it useless in practical terms. This type of ritual behavior is widespread over space and time and is by no means confined to prehistoric Europe. In the present context, such an act appears to represent the symbolic “killing” of an object, a means of separating it and thus making it an appropriate sacrifice. Such behavior may also be seen as a rite of passage from one world to another, an act both of giving and of separation (Green 1993:70-71).

Generally speaking, the evidence for ritual killing of objects in later prehistoric Europe is focused, once again, on high-status military equipment. At Flag Fen in Cambridgeshire, a watery site on the edge of the fens, weapons were deliberately broken before being cast into the water (Pryor 1990 and 1992). Ritual deposition at this site took place over a millennium, from 1200 to 200 BC. Other British sites, such as Llyn Cerrig, reflect this practice. In France, a spectacular deposit of more than two thousand weapons, many ritually damaged, was assembled at the sanctuary of Gournay in Picardy, which dates to the third century BC. These offerings perhaps represent trophies won in battle and given to the gods of the victorious tribe (Brunaux 1988).

Such a practice is, indeed, recorded by Caesar in his Commentary on the Gallic Wars (*de Bello Gallico* VI.17).

The production of model or miniature objects as offerings is, to my mind, a practice identical to that of ritual damage, a means of defunctionalizing an object and rendering it symbolically suitable as a spirit gift. Like ritual breakage, model objects frequently took the form of weapons or armor: thus swords, spears, axes and shields are among the commonest groups. These models are often characterized by the meticulous attention to detail in their craftsmanship: good examples of this are the miniature iron dagger (one of a set of four) from Harlow, which was encased in a sheet bronze sheath, and the bronze axe model from Tiddington, Warwickshire (Green 1986:220-22).

Animal sacrifice and deposition

The evidence for ritual involving animals in later prehistoric Europe reveals a fascinating and enigmatic complexity of activities and the beliefs which must have underpinned them. Here, I intend to focus on Iron Age southern England and northern France, where it is evident that such ritual was central to everyday life, being present as much on settlement sites as in sanctuaries. There is a basic problem in trying to distinguish between food remains and the results of the economic exploitation of animals, on the one hand, and ritual activity, on the other. In any case, it is not necessarily safe to assume that what looks like secular debris is in fact simply that. It can be argued that apparent refuse disposal of animal and other remains in pits and ditches may be the result of complex ritual behavior patterns.

Where faunal remains are found in sacred space, their interpretation as the result of sacrifice or ritual feasting is less problematical. Animal sacrifice falls broadly into two categories: holocausts, where the entire creature is consigned to the spirit-world (strictly speaking by means of its consumption by fire), and ritual whereby the animal is divided between gods and people and consumed by the latter. Clearly the sacrifice of a complete cow, sheep, horse or pig will represent a considerable loss to a small rural community. In circumstances where the meat is shared between worlds, this act of feasting has its own religious significance, perhaps reflecting a convivial relationship between humans and spirits. It may well have been believed that the partaking of sacred food meant that the consumer underwent a sacramental process, in which the meat represented the

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spirits themselves entering and sanctifying the individual feasters. The function of a communal meal was to cement members of a community both to each other and to the divine.

Behind the raw data representing animal sacrifice, we have to envisage a complexity both of ritual and of belief for which the evidence does not always survive in the archaeological record. In ancient Greece, where we have literary evidence, blood sacrifice was undertaken in the context of a highly formalized ritual in which animals were killed and their flesh consumed collectively, according to precise rules. The "consent" of the animal to its role was important: the most efficacious sacrifice was a beast which went peacefully to its death (Detienne 1989). Animals may have been specially selected for their sex, age or color. There may have been taboos against sick or imperfect creatures, as was the case in Greece. The Italic Iguvium Tables of ancient Umbria have preserved details of purification ceremonies which took place at the three town gates. These rites were complex, formalized and specific, involving different practices for each gate (Brunaux 1988:116-17; Green 1992a:93-94).

One aspect of animal sacrifice for which virtually no evidence survives is that of the mechanics of sacrifice; how it worked. Its organisation may have been complicated, involving both the individuals or groups providing the victim and those conducting the sacrificial rites. Did the owners of the animal always call upon professional functionaries or did they sometimes carry out the task of dispatch themselves? In Greek religious activity, the sacrificer was frequently both butcher and cook.

The vast majority of animals used for sacrifice in Iron Age Europe belonged to domestic species, the animals closest and most important to humans. In Greece, care was taken to keep a distance between domestic and hunted animals, and the same appears to have been true in Iron Age temperate Europe. Sometimes there is evidence for special selection: at Hayling Island, for instance, pigs and sheep played the major role in sacrificial ritual, but cattle were significantly absent, a situation not reflected elsewhere in southern Britain. There must have been a reason for this. At Gournay in Picardy, age was an important factor: young pigs, calves and lambs were partially consumed in ritual feasts, but oxen were specially chosen to be sacrificed in old age, and had been used for traction work prior to their killing. Young animals were selected for burial in an avenue leading

to a shrine at South Cadbury in southwest England, where an adult cow was also interred (Green 1992a:92-127).

Important work has been carried out in central southern England on faunal remains from Iron Age sites. Study of this evidence has revealed a complex pattern of ritual behavior focused upon the treatment of mainly domestic animals after death. In this region, there is evidence that it was not only the main food animals that were subjected to sacrifice but also dogs and horses, both important companions of humans in warfare, hunting and farming. The special animal deposits in disused grain storage pits at the hillfort of Danebury and elsewhere have been the subject of intense scrutiny and the large amount of material has made it possible to identify some patterning of behavior. Most faunal deposits took place at the base of corn silos which had been cleared after their final use, perhaps in thanksgiving to the infernal powers for keeping the corn fresh and in appeasement for the violation of their territory. That the animal burials found in such pits are special is suggested by several features: the animals may be entire or partial, and sometimes a species is represented by a single bone; the burials may be multiple and so unlikely to be the result of natural death: horses and dogs occur together sufficiently frequently for us to suppose a ritual significance to such occurrences; horse skulls are particularly common and, indeed, the horse ritual at Danebury is itself very emphatic, as if this creature had a special religious significance for the hillfort's inhabitants (Cunliffe 1986; Grant 1984 and 1991)

Human sacrifice: commonplace or exceptional?

It is important to make a distinction between human sacrifice *per se* and the ritual use of human bodies after death which may have been due to natural causes. Unequivocal evidence for ritual murder in late prehistoric Europe is extremely rare. In Britain, the most likely candidate is Lindow Man, the body of a young man who had been hit on the head and garrotted before being placed, naked, in a shallow marsh-pool. The C-14 dates for this deposition range between 300 BC and the first century AD (Stead et al. 1986). The circumstances and manner of this man's death bear a close resemblance to some of the Danish bog-bodies, notably Tollund Man. An Iron Age bog-body from Gallagher in Co. Galway may also have been a victim of ritual murder (Raftery 1994:188). Other bodies, again often of young men, were interred in old storage pits, for example at Danebury, where the dead person was represented either by his entire or partial body or only his

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skull (Cunliffe 1992). At South Cadbury in Somerset, a young man was interred behind the rampart of the hillfort, as if to bring good fortune to the stronghold (Alcock 1972:103). The bodies at Danebury and South Cadbury may have been the result of ritual murder but may equally have died in battle and their bodies offered to the supernatural powers as symbols of valor and prestige.

In northern France, two sites are particularly worthy of mention: at Gournay, where major depositions of weapons and animals were made, humans were also buried in the enclosure ditch alongside sacrificed animals. They, too, may have been ritually killed or offered to the gods after their death in battle, together with their swords and shields. At Ribemont, a great ossuary was constructed of nearly two thousand human limb bones encircled by weapons and shield bosses, perhaps, once again, the result of the offerings of the trophies of war. It is impossible to say whether these bones came from victims of sacrifice or war (Brunaux 1988; Meniel 1987).

Water, pits and shrines have in common their status as liminal places, boundaries between worlds. Deposition of bodies in these contexts may therefore represent perceptions involving both barriers and ease of access from one world to the next. The disposal of human and animal bodies, whether or not ritual murder was involved in the former, follows the basic sacrificial patterns of giving and separation. The giving aspect is clear: such individuals were set aside for the spirits, whether this happened in life or after death. The separation aspect is also evident: this may take the form of interment — in a pit or a marsh — but separation may also be relevant to the burial of partial bodies, skulls or limbs. Are we witnessing here a similar system of ritual damage as occurs with inanimate objects ?

Conclusion

Sacrifice, with its connotations of giving and separation, appears to have been a concept involving considerable complexity both in terms of expression and belief. Such evidence as we have hints at a system of whose mechanics and thought-processes we can barely scratch the surface. Essential to any understanding of Iron Age ritual is the perception of tenacity of tradition. Whilst sacrificial practices in later prehistory follow the dynamics of change, it is possible to recognize recurrent traditions which may develop or evolve but which do not come from nothing. People tend to act in terms of what they know. So it is no surprise that it is possible to make links through time. For

instance, it is necessary for us to view Iron Age ritual within the context of occurrences during the later Bronze Age: here the centrality of water deposition is very important to our comprehension of sacrificial behavior during the Iron Age. We also have to come to terms with the apparent paradox of ritual behavior in that it is both special and commonplace and it is central rather than marginal to daily life. But for ritual performance to be effective, it had to conform to rules: there had to be formalization, structure and repetition. All these factors would have contributed towards the sanctity and value of the offering, whatever its nature. Indeed, it is posited here that the ritual process itself was at least as important as the sacrificial gift.

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Customs Of The Old Prussians

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In the late Middle Ages the eastern and southeastern coasts of the Baltic Sea were still inhabited by various Baltic tribes: the Lithuanians, the Latvians, the Prussians, the Jatvings (or Suduviai), the Curonians, the Selonians and the Semigallians. The common features for all of them were the origin, the language and the territory. Though only two Baltic tribes — the Lithuanians and the Latvians — have survived until nowadays, in the thirteenth century the above mentioned Baltic tribes were like an island of heathenism in the sea of Christian European nations. Therefore, military orders of West European knights started breaking into Baltic lands with the aim of christianizing those pagan tribes. The Knights of the Sword (the Livonian Order) settled in the eastern part of Baltic lands by the Dauguva river and the conquered lands were called Livonia. The other military order — the Teutonic Order of St. Mary (in Latin *Ordo domus sanctae Mariae theutonicorum*) — settled to the west of Lithuania by the Vysla river and in historical literature it was called the Teutonic order, the Crusader's or German Order.

Lithuanian and Polish historians have proved that christianizing of Baltic tribes was only the cover for German Orders to conquer new lands. The reasons for that have been sought in the economic and social situation of western European countries of that time (Jurginas 1964).

The first to resist the expansion of the Teutonic Order were the Prussians, whose territory in the thirteenth century bordered the lower reaches of the river Vysla in the west, in the south and southeast — lower reaches of Vysla and upper reaches of the Narev's right tributaries; in the east, the border line went along Deimena (the territory of Prieglius) and lakes district of Muzurija.

The Prussian lands had been the scene of fierce battles for half a century until 1283 when they were finally conquered and the German Duchy of Prussia was established there. The Prussians were enslaved: most of them were annihilated, some of them went away to Lithuania

and the rest remained in the Duchy of Prussia. After the defeat of the Prussians, the fight against the Teutonic Order was continued by the Lithuanians. The struggle had been going on for about two hundred years until both the Teutonic and Livonian Orders were conquered.

In 1386 Lithuania adopted Christianity from Poland (the west region of Lithuania did so later in 1413-17). And in the fifteenth century Lithuania became the largest and the most powerful state in Eastern Europe. The other above mentioned Baltic tribes perished in the battles with the Crusaders or assimilated with Lithuanians and Latvians. The later Prussians kept their customs long centuries after christianization. These customs were attacked by the German power. Up to the seventeenth century, decrees prohibiting Prussian superstitions or the sacrifice of a goat were issued. The last decrees of such a character were dated 1624 and 1640. By that time, the Prussians had been Christians for three hundred years. They attended church and prayed there, but at home they sacrificed secretly to their pagan gods. According to reports, these customs continued until the middle of the seventeenth century, whereas the last mention of the Prussians in the Duchy of Prussia goes back to the end of the seventeenth century. After that time, the Prussians disappeared as a national unit. That is, they no longer spoke Prussian but used only German and were thus germanized. Despite this, scholars believe that individual families could still speak Prussian even at the beginning of the eighteenth century.

Thus we can assert that Prussian sacrifices practiced during the sixteenth-seventeenth centuries coincided with the last period of existence of the Prussians on the whole and that Prussian sacrifices to their gods disappeared almost at the same time as their language, which facts confirm that sacrifice was the principal religious custom among the Prussians. The goal of this article is to look into Prussian sacrifices. The focus of my attention are the sacrifices performed at Romovė, the main Prussian temple in the open air, which was situated in the territory which nowadays belongs to the Kaliningrad district of Russia, but scholars haven't determined the precise place yet. Petrus de Dusburg wrote that Romovė was in the middle of Nadrowia — one of the Prussian lands (Dusburgietis 1985[1326]:87) and existed until 1248 (Grunau 1875[1626]:229). Later on, a Catholic monastery of the Holy Trinity was established there (Praetorius 1670: 556).

The heathen Balts honored trees: oaks, limes, pines and other trees of special looks. Usually they were very high and had an aperture —

either a natural hollow or an emptiness formed by a fork of branches grown together again. Such an oak grew in Prussian Romovė; it was of a rare height and thickness and there were three apertures in its trunk in which the idols of three main Prussian gods stood. The first from the side was the bust of *Patulas* — depicted as an old pale-faced and grey-bearded man with white sheet on his head; in the middle aperture there stood the bust of *Perkūnas* — a middle-aged man with angry red face, black curly beard and his head crowned with flames. The third was the bust of *Patrimpas* — a young smiling man without beard, with a wreath of ears of grain on his head. In front of the oak there burned an eternal flame; at a distance of three steps, the oak was circled by a linen cloth which shielded the idols. It was drawn off only during the holidays or in case men brought sacrifices (Plate 1).

Near the oak there lived priests and the chief of them was called the *krivis* who was respected and obeyed not only by Prussians but by other Baltic tribes living in Livonia as well. The *krivis* had such a great authority over people that even his envoy travelling with his token was received with great respect by dukes, noblemen and the common people (Dusburgietis 1985[1326]:87). The latter remark of Petras de Dusburg lets me make a premise that in pre-Christian times Romovė was a religious center for Prussians and for other Balts as well. In this place various holidays, general meetings and tribunals of justice took place if we rightly interpret our sources.

The question of reliability of historical sources is of utmost importance. It is a pity that, because of space, there is no opportunity for analyzing them thoroughly. Nevertheless, it would be useful to examine Grunau's chronicle in some detail because nearly all the data about human sacrifices are taken from this chronicle.

The Prussian chronicle written in 1526 by the Dominican monk, Simon Grunau, has been severely criticized at various times. In the nineteenth century, German and Polish historians (e.g. Hartknoch 1864; Töppen 1853; Grunau 1875[1526]; Mierzyński 1896) accused Grunau of falsification. This criticism arose from ignorance of some original sources on which the chronicler based himself. Grunau's detractors contended that the chronicle was not reliable because analogical facts were not found in other historical works of the same period. This view became traditional and survived until the present. Though an historian, J. Yčas, in Lithuanian historiography tried to investigate an historical origin of Grunau's work and its structure, Lithuanian linguists K. Jaunius and K. Būga were of the opinion that

some of the facts described by Grunau were true, for example the trinity of Prussian gods. The linguists' views were motivated by the claim that Grunau could speak Prussian in the sixteenth century; thus, he could utilize popular stories (Būga 1958). This is also witnessed by a chapter from Grunau's chronicle which is titled "About their Errors and Oddness until the Present Days."

We can trace the response of the superstitions described in this chapter in Lithuanian folklore of the nineteenth and even the beginning of the twentieth century. In 1990, the Lithuanian Institute of Culture and Arts held a scientific conference "Prussian Culture" in which the professor of Bonn University, Udo Arnold, took part. He informed the participants about investigations of Grunau's chronicle in Germany and noted that in 1875 M. Perlbach did not publish the complete chronicle but only part of it. In addition, the Elbing chronicle, used by Grunau and earlier considered to be lost, has been recently found in the Dancing Chronicle. This chronicle has been published in *Scriptores rerum Prussicarum*. This is why, as noted by Arnold, the opinion about Grunau's work is being changed in Germany and his work is being rehabilitated.

In the chronicles, various kinds of sacrifices are described, and they can be classified several ways: according to the function of sacrifice or object which was attained, according to the kind of sacrifice or which way the sacrifice was killed or according to the ritual or gods the sacrifice was devoted to. In the following work the problem of the sacrifice is reduced to one of these questions — to find out what kinds of sacrifices existed and what things were sacrificed. According to the nature of things, sacrifices could be divided into three groups: 1) inanimate objects, 2) domestic animals and birds and 3) human sacrifices.

The Old Prussians sacrificed a number of valuable things which were found in nature, grown or made. These were garden and meadow grasses, vegetables and fruits, linen, wool, clothes, and similar items (Hartknoch 1864:156; Praetorius nd:624). One third of the war spoils, usually the best part, was devoted to the Romovė priests and burnt (Dusburgietis 1985[1326]:88; Praetorius nd:624).

As the old chronicles put it, food was an especially frequent sacrifice to the various gods. For example, in autumn the first-threshed crops, beans, barley, peas or another food, such as meat, flour, honey, *midus* (a drink made of honey), beer, milk or the first fish — on the whole, everything that could be eaten or drunk — was

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sacrificed to the god of fertility, *Kurka* (Praetorius nd:643; Hartknoch 1864:161).

The first catch or prey was very important in sacrifice as the gods were properly honored only when man deprives himself and gives them the first and the most valuable part of his earnings. The sacrificed food was left in special places, burnt or eaten according to a special ritual.

The same was true of the sacrifices of the second group. In honor of the gods, the Old Prussians slaughtered oxen, calves, goats, nanny-goats, rams, sheep or pigs; geese, hens or cocks were also killed (Praetorius nd:582; 649; Hartknoch 1864:171). Attention was paid to the color of an animal or a bird; preference was shown to the colors black and white. As the chronicler Petrus de Dusburg (Petras Dusburgietis), points out, white and black horses or other colors mentioned for sacrifice were not used in farm work (Dusburgietis 1985 [1326]:89; Praetorius nd:619). It should be mentioned that the horses were burnt alive after having been driven to complete exhaustion.

Further on, we will be surveying Prussian sacrifices in connection with three Romovė gods. At the foot of the oak which grew in the Romovė temple, sacrifices and rituals were made, people prayed, priests lived, and meetings of all the elders and the legal tribunal took place. Sacrifices devoted to these three gods were of two types: 1) continuous and 2) sacrifices made on certain holidays or events.

Continuous sacrifices

First of all, the eternal flame devoted to the god of thunder, *Perkūnas* formed part of those sacrifices. The fire was made from oak wood only, and this fire was prepared by special priests. It had to burn day and night, in summer and winter. In the event of the fire's going out, the guardian of the fire was killed. The eternal fire was at the same time the altar of Romovė because sacrifices not only to *Perkūnas* but to other gods were also made there (by burning).

Opposite the idol of *Patrimpas*, the god of water, there stood a huge pot covered by a sheaf of corn. In that pot there lived a snake which was constantly fed with milk. The sacrifice to *Patrimpas* is expressed in corn and milk and in taking care of the snake. In addition, in his honor incense made of wax, ant gum and perhaps amber or similar substances was constantly burned (Praetorius nd:616-17).

Patulas, the ruler of the underworld and king of the dead, had to be worshipped by the offering of three heads — those of a dead ox, a horse and a man (Praetorius nd:616-17) (Plate 2).

Linen cloth can also be reckoned among continuous sacrifices. The cloths circled the oak at a distance of three steps from it and covered the idols of the gods. Their height was seven or eight cubits (Praetorius nd:620; Hartknoch 1864:134).¹

Occasional sacrifices

On great holidays, in honor of the god *Patulas*, animal fat was used as incense in the pot, and oxen and goats were slaughtered. In honor of *Perkūnas* goats, pigs, meat and flitch were sacrificed. Pigs and geese were sacrificed to *Patrimpas*. The blood of the sacrifice was spilled towards the idol of the god for whom the sacrifice was made. Some of the sacrificial meat was eaten by the priests in a ritual way (Praetorius nd:577, 558, 556; Hartknoch 1864:134).

As we can judge by the sources, other things were sacrificed to these gods as well. For example, there was the most valuable part of a warrior's spoils mentioned above. Besides, the seventeenth century Prussian historian, M. Praetorius, noted that although the most important of the three gods was *Perkūnas*, the Prussians were more afraid of *Patulas*, thus sacrificing to him with greater abundance. When a man died, his closest relatives brought the dearest gifts to *Patulas* in order to divert the god's cruelty.

As regards cruelty, it should be noted that all three Romovė gods were very cruel because they "required" human sacrifices. The question of sacrificing people has not been raised yet in our historiography. As the investigations of the past of other countries show, at a certain point in history people were ritually killed by various nations: the Greeks, the Germans, the Romans, the Slavs and others. The Prussians were not an exception, especially at that period, for they had not yet reached the level of a state and still lived in a tribal society. Traces of human sacrifice are spotted in Lithuanian material as well. This is proved by archaeological data, written sources (for example, burial rites of some Lithuanian Grand Dukes) and folklore about the building of castles and towns, the origin of lakes and other sites.

¹ One cubit is variously reckoned from 45 to 83 cm.

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Human sacrifice was part of the pagan burial ritual. Chronicles note that Grand Duke Gediminas of Lithuania (born about 1275 and died 1341) was buried according to pagan ritual. His body was dressed in his best clothes and solemnly burnt in a fire together with his saddled horse, his arms, dogs, falcons and with a dear servant; the ashes were put into an urn and then buried. At the same time three crusaders, who were prisoners of war, and a part of the war spoils were also burnt. Later, Gediminas's son and heir, Duke Algirdas, (born about 1296, died 1377) was buried in a similar fashion: burnt with his arms, dogs, falcons, eighteen horses and a devoted servant.

In Old Prussia, not all but only the most honorable prisoners of war were sacrificed to *Perkūnas*. The prisoners were burnt wearing their arms and seated on a horse (Praetorius nd:585, 624). *Patrimpas*, in spite of his pleasant appearance and a smile, which is pointed out in the old chronicles, "liked" children's sacrifices (Grunau 1875[1526]:95; Praetorius nd:593-612). Sacrificing children was practiced in other countries as well when pleading to the god for rain. This is how M. Praetorius explains such a custom: "owing to the fact that *Patrimpas* predetermined the fertility of people, animals, fish and soil as well as the flourishing and renewal of everything, the community sacrificed children to him as payment (Praetorius nd:593). It is difficult to say whether such customs were performed often, for the sources do not tell us.

The Prussians believed that when somebody died, *Patulas* was often dissatisfied with the gifts the relatives gave to the dead. Thus he often came to the friends of the deceased, especially rich ones, and made noise and frightened them. It was therefore necessary to bring more precious gifts. But if the gifts were still not enough for *Patulas*, he would torture people and frighten them to death. Only human blood could appease the god, and this was done by the priest who would cut his own arm (Praetorius nd:589; Grunau 1875[1526]:95). The fact that not only man's blood but life itself was sacrificed to *Patulas* is proved by the remark already mentioned that the dead man's head was sacrificed to this god. Thus we can see that on certain occasions the Prussians used to make human sacrifices to each of the the three gods of Romovė.

An important role in sacrifices was played by priests. They were the professional sacrificers. People sacrificed only to this trinity of gods in Romovė, but they could sacrifice to other gods in other places. The priests lived all over the land by rivers, lakes, hills or by

holy trees in groves. They acted as mediators between gods and people and were called wise. At that time, magic was not separated from religion; thus priests were prophets and wizards. They knew a great deal of nature's mysteries and arranged rituals; they saw and understood signs which appeared during sacrifices and symbolized the will of the god. There were many priests of various categories. M. Praetorius wrote that in his time (that is the seventeenth century), it was still possible to spot the data about ancient priests at the border of Prussia and Lithuania. We will not enumerate all of them, but we will present several examples: the priests who observed the stars were called *žvaigždžiuronys* (star observers), those who observed birds and their flight were *lekutonys* (flighters), the wind was *vėjonys* ("wind"-ers), those who took care of grass snakes were *žaltonys* (grass snakers), who forecast weather *oronys* (weather-ers), who predicted the future from the entrails of the sacrifice were *viduronys* ("inside"-rs), who predicted the future out of blood were *kraujonys* ("blood"-ers), out of fat *taukučiai* (fatters), out of smoke *dūmonys* (smokers) and so on (Praetorius nd:711, 720, 721, 733).

The head of all the priests was called the *krivė* (high priest) and lived in Romovė. The neighboring tribes respected him as a pope (Dusburgietis 1985 [1326]:87). When it was thundering, people believed that the high priest was talking to the gods. The gods answer to the people came through *krivė*. He was the wisest priest as well, and he knew everything that every kind of priest knew. The *krivė* could not be in error as his voice was the voice of the god, that is why he was the high judge (Praetorius nd:605, 685, 736). In general, because of their esoteric knowledge, the priests had an immense power in managing society's matters. They pointed out and ordered what had to be done. They even directed war actions (Praetorius nd:739). In spite of general respect and power, priests were not rich; they did not own any wealth. They had to be submissive, to pray, to keep the fast, to be celibate and, in case of need, to help people not only by praying but by advice or by concrete actions, for example, by curing diseases (Praetorius nd:728, 737; Hartknoch 1864:165). Written sources indicate that they were beggars and shepherds. They apparently looked after and pastured animals brought for sacrificing (Plate 3). It is worth noting that Lithuanian ethnography reveals that up to the beginning of the twentieth century particular attention was paid to beggars and shepherds in Lithuanian villages. Obviously by tradition, ancient priests could be the prototype of these people. Thus, the functions of

priests and severe restrictions in their lives required undoubtful devotion. Laying bridges between the gods and the people, priests had to sacrifice themselves on behalf of the latter. Because of this reason sacrifices are inseparable from the priesthood.

H. Maletius wrote that the priests were “usually poor, blind and lame” (1563:[19]). When asked why they did not help themselves they usually answered: “that is the will of the gods” (Maletius 1563:[19]; Hartkoch 1864:165). It shows that such a state of priests is the order sanctioned by the cult. The word in the quotation “usually” (Germ. *gemeinlich*) would prove that the priests as a rule were not only poor but lame as well. The material presented by Praetorius allows us to think that there existed several different layers and kinds of priests. It would, therefore, be foolhardy to affirm that all priests were both blind and lame, but the data from various sources supports the premise that the observed lameness had a ritual character or even origin.

As mentioned earlier, only the priest's blood could appease *Patulas*. Similar things were also noted (Grunau 1875[1526]:208; Praetorius nd:583, 615). At especially important moments for a community, in addition to the high priest, other priests would sacrifice blood by cutting themselves as well. In case of disaster, this sacrifice was done regularly until the situation improved. It is obvious that the priests could become lame asking the gods for help in such a way. It becomes clear when we examine mythology. In fact, priests had to know everything people should do at different times, such as when it was the best time to start sowing or hunting, to start war actions or do other jobs, how to behave in case of danger and similar situations. That was connected with the spiritual sphere and with mysteries which were held in the god's hands. The aim of priests was to worm these secrets out, and that was always risky for a mortal being. A great number of mythological tales prove that a trip to the otherworld is always accompanied by danger. During this trip the main character suffers great torments, he has to die and to revive again. There are many such examples in Lithuanian legends and tales. Raising into this divine space, the priests sacrificed the only wealth they had, their lives — in part, because as ancient Prussians saw it, blood was the substance of life. They sacrificed the light of their eyes also. Hennenberger describes the river of Golbė which flows through the Insterburg district. Not far from Narpīškiai the river was thought to be holy. There priests prayed and were blinded which was considered to be a great honor (Hennenberger 1595:11). In this connection, we can recall

Lithuanian *vaidilos* (bards) who, like Homer, were sometimes depicted as blind too. The image of a blind prophet is universal; it is found in many different cultures. Deprived of outer seeing the man of wisdom acquired inner sight which was often equal to a poet's vision. For example, Celtic Druids, the Greek Pythia and other priests put the god's will into verse.

As regards Prussian sacrifices, a sacral burning should be mentioned. The chronicles note that the most honorable people of high status could burn themselves. But one more thing was noted, that such a death was quite often chosen by ordinary Prussians who could not endure the burden of life. They believed that such death would help them to stay with the gods in the future world (Grunau 1875[1526]:64, 97). Fire is holy. In Lithuanian sources we can trace the belief that fire cleans everything, even all the sins. Fire is like a gate, and having gone through it, man becomes a saint. According to legend, the first Prussian rulers — a secular one, Videvutis, and an ecclesiastical one, Brutenis — having reached venerable ages, called all the people of their country and declared that they would sacrifice themselves. Dressed in their best clothes, hand in hand, they stepped into the fire. After their deaths they were worshipped as gods (Grunau 1875[1526]:79).

In summary, we can state that the ancient Prussians had many diverse sacrifices including inanimate objects, food stuffs, animals, birds and people. The Prussians believed a sacrifice was significant and effective only when a valuable or even the most valuable thing was sacrificed to God, such as the first harvest or the first catch in fishing, the best part of war spoils and the most valuable price, a man's life.

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Plate 1: The Holy Oak at Prussian Romovė (after Hartknoch 1864:164).

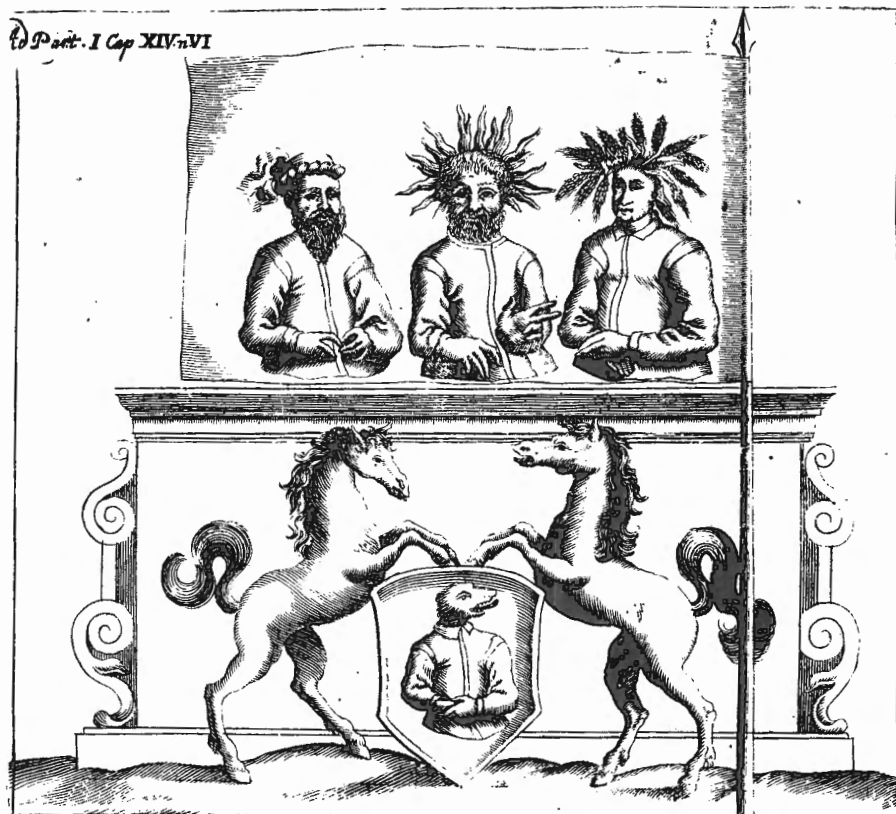


Plate 2: Both sides of an ancient Prussian flag. In the upper part the three main Prussian gods are depicted (from left to right: Patulas, Perkunas and Patrimpas) (after Hartknoch 1864:164).

Part. I Cap. X. num. VI.



Plate 3: Prussian priests of the sixteenth century (after Hartknoch 1864:164).

Religious Authenticity at the Holy Wells of Ireland: a Methodological Problem

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Sacred springs within the context of Indo-European cultures

Sacred springs, or what are known in the British Isles as Holy Wells, are among the most ancient and persistent of venerated religious phenomena the world over. Many of these sites have been under continuous veneration from prehistoric times to the present (Ross 1967:19-39). For this reason alone, they are an important object of research and fieldwork in the history and phenomenology of religion.

Comparative research has indicated that veneration of springs and rivers is most active among cultures that religiously view the earth as sacred and as the source of life and power, and technologically emphasize horticulture.¹ Although Proto-Indo-European culture was religiously oriented to the heavens, as indicated by the importance of male sky gods over female earth goddesses (Dexter 1990:35) and focused its technology on pastoral nomadism in spite of the possession of certain agricultural technologies, there was a religious consciousness of the earth as mother, and within that context, of the sacrality of rivers and springs. In fact, among those few goddesses which are clearly Indo-European, we find the goddess of streams, rivers and springs (Dexter 1990:35-36).

Notable among these is the Lithuanian goddess Laimė and her chthonic counterpart Laumė. As a goddess of fate and spinning, Laimė was the most important goddess in the Baltic pantheon. It was she who was the controller and progenitor of life and, as such, was identified with the sacred springs which were inexhaustible givers of life.²

¹ See Walter and Mary Brenneman (1995:ix-xi) for a discussion of earth centered religions and their relationship to water.

² See Gimbutas (1989:111) for a discussion of this association. Miriam Dexter (1990:54-57) also provides insight into the functions and symbols of Laimė/Laumė.

Sacred springs and rivers in the Celtic context

Although the Celts share in a common language group with other Indo-European cultures such as Baltic, Germanic and Iranian, they were very different from them in both religious and technological emphasis. Whereas the Germanic and Iranian peoples looked religiously to the heavens and the sky gods as source of life and creation, the Celts found the power of life to be lodged in the earth and correspondingly centered their technology on horticulture. This does not mean to say that the Irish Celts on the one hand and Germans and Iranians on the other did not both have agricultural as well as pastoral-nomadic technologies. For some reason, however, the German and Iranian groups placed greater importance religiously and culturally on pastoral nomadism and Dexter suggests that the pastoral-nomadic emphasis became prominent among the Proto-Indo-Europeans and may have been due to a climatic change that favored stock breeding over agriculture (Dexter 1990:34). Eliade supports this emphasis on pastoral nomadism and writes "Through they were never able to renounce agricultural products, the Indo-European peoples preferred to develop a pastoral economy. Pastoral nomadism, the patriarchal structure of the family, proclivity for raids, and a military organization designed for conquest are characteristic features of the Indo-European societies" (Eliade 1976:188).

Certainly, much of the difference in technological emphasis can be attributed not only to climate, but also to ecological context. Whereas the Germanic and Iranian peoples were located in ecological contexts, such as forest and grazing land, that favored stock breeding, the Irish Celts were located in a fertile mixed landscape that was more hospitable to cereal grain agriculture. The result of these differences is religiously reflected in the respective loci of their cosmogonies. In general, the Indo-European idea of god, as reflected in both Germanic and Iranian contexts, "...proves to be bound up with celestial sacrality, that is, with light and 'transcendence' (height) and, by extension, with the idea of sovereignty and with creativity in its immediate meaning: cosmogony and paternity" (Eliade 1976:189). Thus Germanic and Iranian cosmogonies are executed by celestial male divinities.

The motif of the male creator is maintained in the Irish case as a residue of their Indo-European heritage, but now the god is a lord of the Other World and husband of the goddess who, in the forms of Banba, Fotla and Eire, are sources of Ireland and of life. Thus, the male "father god" may be progenitor of human life, but is dependent

on the goddess for creation. He is not creator of the world and of all life, nor does life derive from the celestial regions.

In Ireland, this Great Mother of all life is located in the Other World which itself is most often referred to as within the earth or on an island in the West. Various names for the Other World such as The Isle of Women and The Land of Ever Living Women give witness to its domination by women and the feminine. This feminine character of cosmogony is also evidenced in the *Labor Gabala Erenn* which describes the peopling of Ireland by fifty women and three men under the leadership of the primordial Cessair. The locus and source of cosmogony in Ireland sets the feminine tone of the culture while celestial source of cosmogony in Germanic and Iranian contexts sets the tone of the masculine orientation in those cultures. Thus, although both groups, due to their shared Indo-European heritage, had in some instances common ritual practices such as the cattle raid, the religious symbolism of these practices was at opposite poles. The Iranian peoples interpreted the rite from a male sky god perspective and the Celts from a female earth centered perspective.³

Given this religious and symbolic difference, it might be expected that the sacred spring in the Celtic context was of far greater importance religiously than it was in the Germanic and Iranian one. This fact is also true of the relative importance given to the goddesses of springs and wells in the respective cultures. For example, the river Seine in France was sacred to the goddess Sequana whose temple was located at the spring which was the river's source. In Ireland both sacred rivers, the Boyne and the Shannon, are sacralized by goddesses, Boand and Sinann respectively. Because of this symbolic and religious emphasis among the Celts, the cult of the sacred spring or holy well is still active in Ireland as well as in certain parts of France, Spain and northern Italy, all strongly Celtic areas. Today Ireland alone is dotted with approximately three thousand active holy wells at which many aspects of the earth centered Celtic rites are preserved in syncretism with Catholic ritual.

The cult of the Holy Well in Ireland

The present Christian veneration of sacred springs with their attendant symbols of tree and stone, is founded upon ancient Celtic and

³ See Brenneman (1990) for a detailed analysis of the difference in symbolism

pre-Celtic religious practices which are at least partially documented in extant texts. In *The Dream of Oengus*, one of the preliminary tales to the *Cattle Raid of Cuailnge*, we find that the religious festival of the new year, *Samain*, is held by a sacred lake or pool, Lough Bel Dracon.⁴ The association of the *Samain* festival with this sacred water configuration provides a mythic model for later rituals of kingship and yearly renewal held at similar earthly water sites. Another text, the prose *Dindshenchas*, describes a sacred spring known variously as Connla's Well or the Well of Segais which was located in the Other World. Around this spring are nine sacred hazel trees and nearby a sacred stone called *lia fail*. The berries of the hazel trees fell into the water and were eaten by a magical salmon who lived in the spring. Whoever would eat this fish would be informed with supernatural wisdom. This myth establishes the holy well complex existing today in Ireland, that of rock-tree-water and the extending water symbol, the sacred fish. The wisdom was lodged in the tree and its berries and was activated by their contact with the water and transmitted by the fish.

Other myths that provide a model for the cult of the spring are found in the Finnian cycle and tell us about Finn spotting three beautiful women standing in the doorway of a *sid*, or Other World mound. One of the women is holding a pitcher of water from the sacred well. Finn approaches the women and attempts to take the pitcher from the hand of the maiden. She in haste withdraws the pitcher and slams the door on Finn's thumb. Instinctively, Finn raises his thumb to his mouth to ease the pain. Some of the water from the pitcher had splashed on his thumb and when entering his mouth gave him instant wisdom.⁵ Here we see the wisdom lodged in the water itself. True to the function of myth, we are presented in these tales with the models or paradigms which are still used today among the Irish at their "rounds" or rituals that center on the wells.

Continuity at contemporary Irish wells with prehistoric well cults is further evidenced through archaeological data. Sanctions such as holy statues, rosaries, holy pictures, funerary cards, personal items

between these two groups.

⁴ Anne Ross mentions this episode as evidence for the cult of the well in Ireland (1967:23).

⁵ Three versions of Finn gaining wisdom from the Well of Segais are conveniently listed in Thomas F. O'Rahilly's *Early Irish History and Mythology* (1946:326-28).

such as pens, various types of pins, coins and items of clothing, are left at the wells. These sanctions continue the prehistoric practice of votive deposits that were found by archaeologists at early sites. In continuity with the prehistoric cult of the head, we find now that heads of stone statues of saints at the wells are inscribed in the form of a cross (this is also done on sacred stones by the well), and often the heads of plaster statues, especially of St. Martin and of the Infant of Prague, are removed and either cast into the well or buried for good luck. One of our informants was told by his mother on the eve of his wedding to take the head off a statue of the Infant of Prague and place it before his doorway as a charm to promote the fertility of his future wife. Thus the prehistoric Celtic association of the head with fertility, wisdom and prophecy still remains and is often connected to the holy wells.

Veneration of sacred trees, which finds no place in Christianity, is still much in vogue. Pieces of cloth called *clooties* are placed on trees as a means of relieving sickness through the power of the tree. Often rosaries, coins and medals are embedded into the sacred tree so that their owners can maintain constant contact with the healing power of the tree.

Both water and fish retain today the power of healing wisdom, now often translated in a literal fashion to a healing of the eyes, that is, of insight. We have gathered many stories of magical trout, salmon and eels in holy wells, which if seen by a pilgrim, will grant a special favor usually of a healing nature. The drinking of the water of many wells is attributed to the cure of various types of illness. Usually, however, wells have a particular specialty for healing such as headaches, toothache or sore eyes.

Problems of religious valuation in fieldwork at the Holy Wells

Since the discovery of our first holy well in Ireland in 1974, my wife Mary and I have been haunted by these watery sites. We began formal research in 1979. On one of our first field trips, which have been funded by Earthwatch for fifteen years, we visited a team in the field and asked them to take us to what they thought were the most active and religiously authentic of the wells they had documented.

We were guided to several very "unspoiled" wells in a natural setting. There were a few decaying statues and some coins, but little else to indicate vitality at the well. The team mentioned in passing that they had discovered several highly "commercialized" wells but had

declined to call them to our attention because of the "plastic virgin Marys" and other cheap offerings left by the people that "spoiled" the setting. We asked to be taken there and found several highly active and, what we considered to be, religiously authentic sites. It was clear that there had been a misjudgment of the religious value of these sites due to culturally conditioned aesthetic preconceptions.

Religious valuation and interpretation from a phenomenological perspective

This misjudgment by our team seemed to lend itself to correction through the phenomenological method, especially in the phenomenological notions of the intentionality of consciousness and the intentionality of objects being examined. Phenomenological analysis suggests that consciousness is by nature relational and that the components of the object of consciousness are themselves in relationship. Further, both the subject and the object cognized are intentional, that is, they project their own-most being through the "signs" which constitute them. In order for consciousness to function intentionally, that is according to its authentic nature, it is necessary to make some corrections. This is true because of cultural and habitual accretions that have partially or completely obscured the authentic functioning or intentionality of consciousness. We saw this clearly in the case of our fieldworkers who had rejected the documentation of an authentically religious well because of cultural accretions or biases.

Correction is made by means of a reduction; that is, one methodically reduces or takes away all components of the object of investigation that obscure its intentionality or givenness. What is left is the essential or authentic object. The same reduction is applied to one's own attitude of investigation. One reduces one's own consciousness to its intentional nature by suspending or bracketing the cultural biases, personal tastes etc., and then one begins the investigation. Intentionality, then, is the "truth" of the subject/object relationship.

Finally, the notion of authenticity caps the method and is its goal. Once the judgment has been made that the phenomenon is religious, that is that it points beyond itself to some unseen or supernatural power and participates in that power, its religious value, from a phenomenological perspective, rests on the balanced dialectic between the name and the object named. What we seek in this instance is the authentic intentionality of the holy well. This is determined by

comparative study, that is, perspectively. The result is not a particular well in history but an ideal well, the idea of the holy well, its intention.

Phenomenological constitution of a Holy Well site

The holy well site itself is constituted by the complex of rock-tree-water that we have earlier examined. This complex bears within it an authentic intentionality which is stated or amplified by the sanctions, *clooties*, and religious statues that adorn the site. At such sites, the well complex is the object named, and the various sanctions the name. Hypothetically, the first devotee who attained a cure or simply experienced the power of place at the site, left some coins, or a religious object to "name" or mark the site. In this way the latent or implicit power of the site, its intentionality, was announced and amplified to all who observe the well.

We choose to call the well complex itself the signified or object that is intending, and the sanctions, statues etc. the sign or name of the signified or intending object. Thus, the well and its healing intentionality are amplified or carried forth by the signification of the sanctions. The well plays the active role, the sanctions a passive one which is also interpretive. The sanctions are dependent on the well and in order to amplify effectively the intentionality of the well, must be in harmony with it. Such harmony is the authentic relationship between sign and signified and renders the well religiously authentic.

The performance of jazz music provides us with a musical analogy to illustrate this relationship of sign and signified. The ground and theme of a jazz composition is the melody as set forth by the composer. Each musician in the performance is given an opportunity to improvise on this melody, thus extending the musical possibilities of the melody within the confines of the chordal progression that underlies the melody and provides its foundation. If the musician transgresses this chordal progression in his improvisations, harmony between the melody and the improvisation is lost and immediately identified by even the inexperienced listener.

To return to the case of the holy well, the polarity of sign and signified, natural and man-made at the well is found on a continuum in which both poles are present in varying degrees. For example, from textual study we discovered that part of the intentionality of the well was to play the role of center of power for each local community or *tuath* which was defined by natural boundaries and configurations, that

is by the notion of placehood. This power of the center was amplified by the presence and name of the chieftain of the *tuath* of which the well was the center.

The dialectic of sign and signified at Irish Holy Wells

Doon Well near the town of Kilmacrenin, Co. Donegal, is an excellent example of this dialectic between sign and signified. The well was part of a complex of rock-tree-water which was the inauguration site of the Clann O'Donnell. Thus its natural power was amplified only by the local rituals that went on there. These stressed the conjugal relationship between the chieftain and wisdom, given by the goddess of the place, which was symbolized by the well. Later, the well took on an association with St. Columcille, a local, Christian saint. The Christian message was not in perfect harmony with the power of place, but it was given by a local Irish saint. Still later the well was blessed by a local healer, Lector O'Friel, and was given his healing powers.

In our most recent visit to the well in June of 1993, we found that a new phase of signification had begun in which the sign is taking on a life of its own which is in danger of rendering the well, or signified, as religiously inauthentic. On the newly paved path to the top of Doon Rock where the O'Donnells were inaugurated, there has been recently built a life-sized grotto of Our Lady of Lourdes which is attracting attention away from the well. Thus it is out of harmony with the intentionality of the well and has become independent of the well. The holy well which is grounded in the loric and the power of place is competing with a universal symbolism which detracts from its intentionality. The sacred spring is in danger of becoming a shrine. Should this happen, the intentionality of the well would be obfuscated and thus become religiously inauthentic.

Often we find that this dialectic remains in favorable balance and religious authenticity is maintained over a very long development that may cover several phases. St. Bridget's Well, (*Dabhach Bhride*) in Liscannor, Co. Clare is an example of such a well. The site was originally used for the Celtic fire and harvest festival, *Lughnasa* (MacNeill 1962:275-86). This festival was sacred to the Celtic god Lug, a solar deity, and commemorates the death of his mother Tailtiu, a mother goddess, and thus of the earth at year's end. The Celtic goddess Brigid was also associated with the sun as evidenced by her swastika shaped cross, still in use today. Christianization retained the

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attributes of the Celtic Brigid, added some associations with the Blessed Virgin, and renamed her St. Bridget.

Today at the well, the syncretism of Celtic and Christian, natural and man made, sign and signified is retained in a balanced and authentic manner. The well itself is under the earth, reminiscent of the earth orientation of Brigid. Prayers to St. Bridget referring to cattle, milk and growth of plants are found among other universally Christian sanctions. The ancient swastika cross woven from straw is often found near the well, and the day of the patron is the Celtic date of *Lughnasa*, August 1, and not the official date of St. Bridget, February 1, though it too commemorates the Celtic spring festival of *Imbolc*. Finally, there is said to be a sacred trout in the well, that, if seen, guarantees healing.

This well has managed to retain its intentionality in a genuinely authentic manner. The sanctions at the well amplify the earthiness of the watery site and the landscaping accentuates the sacred nature of the earth, while the Christian symbols present, (including plastic Virgin Marys) in harmony with these themes, for the most part, carry one beyond the Mother to her son, a relationship not unlike that of Brigid and Lug.

Some concluding remarks

To be sure, there is no historically actual "perfectly authentic" holy well. There is no one well that is used as a norm against which to measure others. Thus the notion of phenomenological authenticity avoids the pitfalls of the classical type and makes every effort to lay bare the intentionality of the wells and not prove the truth of the investigator's pet theory. It seeks to both identify and set aside bias and culturally based aesthetic preference, and to focus on the "idea" of the well, or wellness, as it so freely gives itself to open investigation. It also seeks to avoid the normative critique of true and false religious material. Finally, it surmounts the relativism so popular today that renders all religious phenomena of equal importance.

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Dawn-Maid and Sun-Maid: Celestial Goddesses among the Proto-Indo-Europeans

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The goal of this paper is to ascertain the difference between the Indo-European Dawn goddess as she appeared in Northern Indo-European, particularly in Baltic folk songs, as opposed to the manner in which she was celebrated in Southern Indo-European myth and ritual, particularly in Italic, Greek and Indic.¹ Proto-Indo-European **ausōs-ā*, **aus-tero* gave rise to several cognate dawn goddesses, including Lithuanian *Aušra* (found with various suffixes), Latvian *Auseklis*, Old Prussian *Ausca*, Attic Greek Ἥως (Homeric Ἥως and Aeolic Ἀῶς), Roman *Aurora*, Old Indic *Uṣas*.²

Throughout Indo-European myth, as well as in the myths of other cultures, the Dawn is often perceived as a woman reluctant to leave her bed and her lover. She therefore is tardy in bringing light to the world. In Latvian *daiņas*, or folk songs, excuses are made for the late arrival of the dawn goddess, *Auseklis*.³

For three mornings I have not seen
Auseklis rise:
The sun maiden has locked her up
in an oaken chamber.⁴

¹ See Polomé (1990:331-38) for a discussion of Northern Indo-European with regard to its linguistic substrates.

² For a discussion of the etymologies, see Robbins [Dexter] (1978:201-02). Other possible derivatives are Welsh *gwawr*, 'dawn' and OE *Ēastre*, although there has been much dispute regarding the validity of a Proto-Germanic dawn goddess.

³ *Auseklis* in Latvian, literally the 'morning star', is personified as a female but has masculine grammatical gender.

⁴ *Trīs rītiņi neredzēja
Auseklīša uzlelam:
Saules Meita ieslēguse
ozolina kambart.* (Jonval 1929:No. 424 = B34022)

As we see, in fact, Auseklis sometimes does not appear at all. Latvian folksongs are very creative in their excuses for the goddess:

Where is the Auseklis of the morning,
Whom I did not see rising?
Auseklis [is] in Germany;
She is sewing velvet skirts⁵.

The Lithuanian dawn goddess Aušra is often called *Aušrelė* 'dear dawn', employing the very common Lithuanian diminutive of endearment. She is also called *Aušrinė*, a form which utilizes the adjectival suffix; *Aušrinis* means 'morning' and *Aušrinė Žvaigždė* is the 'morning star'. The name *Aušra* is well known in Vilnius today; at the *Aušros Vartų Gatvė*, "the street of the gates of Aušra," stands the Eastern Gate of Vilnius, above which is a chapel honoring the Virgin Mary. This is considered by many to be the most sacred spot in Vilnius. *Aušra* has long been important to the Lithuanians; her name was given to a newspaper published in the 1880's and associated with a rebirth of Lithuanian nationalism (Sabaliauskas 1993:101). *Aušra* appears commonly in Lithuanian *dainas*, as she does in Latvian.⁶ In one Lithuanian *daina*, the rising of the dawn can be contrasted to the late rising of one's little girl:

The white dear dawn (*aušrelė*) dawns;
The bright dear sun (*saulelė*) rises.
While my dear little girl
Sleeps a sweet sleep.⁷

Thus, the Dawn is not perceived to be responsible for the late rising of the maiden. In fact, even in the case of the young woman, there is no guilt given. The poem continues:

⁵ *Kur tas rīta Auseklis?*

Kā neredz uzlecot?

Auseklis Vāczemē

santa svārkus šudināja. (Jonval 1929 No. 418 = B33831)

The translation of this *daina* is by Claes Wennerberg, with help from our Latvian colleagues at the conference.

⁶ The Lithuanian *daina* is a secular song. A folk song is *liaudies daina*, a national song is *tautinė daina*, and a war song is *kariška daina*. The texts used for this paper are folk songs.

⁷ *Aušt balta aušrelė*

Tek šviesi saulelė

Dawn-Maid and Sun-Maid

Who can rouse (her) for me;
(who can) awaken this young woman?
To him I would give
my own bay horse.⁸

In this poem, unfortunately, the young woman is sleeping an eternal sleep, so it would be difficult to make a case for guilt in any event. Many *dainas* sing of the dawn; generally, she is only one of several natural phenomena mentioned.

Another Lithuanian *daina* describes the function of the dawn:

I went to the Dawn.
The Dawn answered,
"I have to kindle the dear little fire
For the dear little sun
early in the morning."⁹

The dawn, in Baltic myth, was mother of the moon. The moon was either married to Saule, the sun goddess, or her daughter, Saules Meita,¹⁰ "the Moon married Saule Meita"¹¹ In another folk song, "Saule has given her daughter to Ausekis' son"¹² The Slavic dawn, Zarya,¹³ is not linguistically cognate with her Baltic sisters, nor

O mano mergytė
Miega saldy miegą (Korsakas 1964:No. 111):

- 8 *Kas man gal prikelti,*
Ją jauną pabudinti,
Tam aš dovanočiau
Savo bėrą žirgą. (Ibid.)

- 9 *Išėjau pas aušrinę.*
Aušrinė atsiliepė:
— Aš anksti ryt saulelei
turiu prakurti ugnelę. (Korsakas 1954:50)

¹⁰ See Gimbutas (1963:201-02). The moon, according to Gimbutas, was unstable; not only did he fall in love with the daughters of the sun, in Latvian myth, he also married Saule herself and fell in love with Aušrinė as well.

¹¹ *Mēness ņēma Saules Meitu* (Jonval 1929, Nos B33845, B34047, B33865).

¹² *Saule savu meitu deva,*
Ausekliņa, dēlinam;
pate cēla zelta pūru,
sudrabiņa kamaņas. (Hatto 1965:701 #10)

¹³ Zarya has several cognomens; as the morning-dawn, she is Zarya

is she depicted as lingering. In a typical folk song, a Hussar goes to visit his mistress; lest he tarry too late he enjoins her to

Awake me early in the morning,
my sweet one,
before the white dawn,
before the daylight come.¹⁴

Although Zarya does not herself linger, she is thus aligned with lovers who may not tarry beyond her light.

Slavic dawn mythology thus is neither linguistically cognate nor mythologically similar to that of the other Indo-European cultures. Baltic dawn myth, on the other hand, shares similar elements of the dawn goddess myth with southern Indo-European. In the myths of these cultures, as we shall see, the dawn is mother of either the moon or a sun-moon god; in both, she is tardy, but in southern Indo-European this tardiness brings reprisal.

The Attic Greek, Eōs was personified as the dawn rather late, in the Hellenistic period, but she shares both name and myth with other Indo-European dawn goddesses. Lovers complain because she separates them by bringing the morning light. Eōs too had a lover, according to myth, and she too preferred to spend her mornings in bed with him. Her lover, Tithonus, was mortal, and she asked the father-god Zeus if he would bestow the gift of immortality upon Tithonus so that she might live with him forever. Zeus granted the request, and Tithonus became a god — almost. Unlike the gods, he did not have the gift of eternal youth, since Eōs had not thought to ask for it. So the immortal Tithonus continued to age throughout time. The poet Antipater celebrates him:

You are growing old, Tithonus,
or else why have you thus chased

Utrennyaya; as the evening twilight she is Zarya Veckernyaya. Furthermore, Zarya's mythology is quite different from that of the other Indo-European dawn-goddesses. She was at times represented as an armed virgin warrior, and in some myths she, rather than the sun maiden or the sun goddess, was the bride of the moon (Dexter 1990:65).

¹⁴ *Razbudi, milaya,
Po utru ranen'ko,
do beliya zoryushki,
chto b ne razsvetalo* (Sobolevskii 1895-1902:IV.373, No. 475).

your bedfellow Eōs from your bed?¹⁵

Despite his age, Eōs, nonetheless, remained faithful to her ancient lover, only with reluctance leaving his bed each morning. Her cognate Roman personification, Aurora, was given the same mythology. Ovid called her "the golden one..." (*flavia* [*Amores* I.13.2]) and states "she comes from her very old consort... (*venit a seniore marito...*)" (*Amores* I.13.1). Aurora, just as Eōs, when she left Tithonus' bed, "unwillingly fulfilled her duty for the world (*invitum et terris praestitit officium*" (Propertius II.18A.7ff).

The product of their love was a son, Memnon, and the Roman poet Ovid calls Aurora "Memnon's saffron yellow mother. (*Memnonis lutea mater*" [*Fasti* IV.713-14]). Memnon was handsome; in fact, in the *Odyssey*, Homer measured handsomeness by Memnon's beauty:

That man [Neoptolemus] indeed was the most handsome
man I saw, next after the godlike Memnon.¹⁶

The Greek poet Hesiod described Memnon's aspect as bright, even burning:

To Tithonus, Eōs bore Memnon, equipped with bronze,
king of the burnt-faced people [the Ethiopians].¹⁷

Thus the beautiful-faced one, king of the burnt-faced ones, son of the dawn, was most likely himself a shining celestial deity, either sun or moon.

Although Eōs and Aurora share mythology, Aurora shares myth and ritual with Mater Matuta, "morning mother." The Roman rites of the Matralia, "the mothers," celebrated June 11th, are particularly pertinent to our inquiry. The Roman church father Tertullian, in his treatise on monogamy, refers to the Matralia:

On Fortuna Muliebris only an *univira* places the crown,
just as on Mater Matuta.¹⁸

The *univira* was a woman who had been married but once. (Even if one's husband died, the truly honorable woman would not remarry.

¹⁵ γηράσκεις, Τιθωνέ· τί γὰρ σὴν εὐνέτιν Ἡῶ
οὕτως ὀρθριδίην ἤλασας ἐκ λεχέων;

¹⁶ κείνον δὲ κάλλιστον ἶδον μετὰ Μέμνονα δῖον (*Odyssey* xi.522).

¹⁷ Τιθωνῶ δ' Ἡῶς τέκε Μέμνονα χαλκοκορυστήν
Αἰθιόπων βασιλῆα ... (*Theogony* 984-85).

¹⁸ *Fortunae Muliebris coronam non imponit nisi univira, sicut Matri Matutae.*
(*De Monogamia* 17).

Virgins and *univirae* were, according to Roman mores, the only chaste women.) Ovid describes how, in this ritual, Mater Matuta cared for her sibling's offspring:

Now, Phrygian Tithonus,
you are complaining
that you have been abandoned
by your wife (the Dawn),
and the watchful morning star
goes forth from the eastern waters.
Go, good mothers,
(the Matralia is your festival)
and offer yellow cakes
to the Theban goddess...
the scepter-bearing hands of Servius
consecrated a sacred temple
to the Parent Matuta.
She excludes female slaves
from the threshold of her temple
and calls for toasted cakes. ...
let not a devoted mother pray to her
on behalf of her own offspring:
she herself was seen to have been
a rather unfortunate parent.¹⁹
You should rather entrust to her
the progeny of another:
she herself was more useful to Bacchus
than to her own (children).²⁰

¹⁹ Ovid here confused Mater Matuta with Ino, who nursed her nephew Dionysus (Bacchus), son of Zeus and Semele. Ino's sister Semele had been burnt to a crisp after she saw Zeus in all his power, and Zeus subsequently sewed his unborn son into his thigh, whence he gave androgenetic birth to him. Since the infant was motherless, his aunt Ino nursed him. Afterwards, Ino was punished by Zeus' jealous wife, Hera, who caused both Ino and her husband Athamas to become insane. Athamas killed their baby, Learchus, and Ino fled; and, with her son Melicertes in her arms, she jumped off a cliff into the sea. The god Poseidon (Neptune) transformed the child into the god Palaemon, and Ino into the goddess Leucothoe. (See Ovid, *Metamorphoses* IV.512-530; 539-542. Cf. Apollodorus I.ix.2; III.iv.3.)

Dawn-Maid and Sun-Maid

There are several characteristics of this ritual which have parallels elsewhere; female slaves are excluded from Mater Matuta's temple and Mater Matuta takes care of her sister's child. A few decades after Ovid, the Greek philosopher and biographer, Plutarch, described the ritual involving female slaves in more detail:

The women, leading a handmaid into the shrine, strike her with sticks, then drive her forth again; they take in their arms the children of their brothers in preference to their own children.²¹

Plutarch too declared that, in these Roman rites, women prayed only for their sisters' children:

Why, in the temple of [Mater Matuta], do [women] not pray for blessings for their own offspring, but for those of their sisters? ... Is it perhaps that Ino was sister-loving and she nursed the son of her sister, but she herself, with regard to her own children, was unfortunate; or otherwise, is it that the custom is moral and good and that it provides much goodwill among relatives?²²

²⁰ *Iam Phryx, a nupta quereris, Tithone, relinqui,
et vigil Eois Lucifer exit aquis:*

*Ite, bonae matres (vestrum Matralia festum)
flavaque Thebanae reddite liba deae.*

*...Matutae sacra parenti
sceptraferas Servi templa dedisse manus.*

*...famulas a limine templi
arceat ... libaque tosta petat ...*

*non ... hanc pro stirpe sua pia niater adoret:
ipsa parum felix visa fuisse parens.*

alterius prolem melius mandabit illi:

utilior Baccho quam fuit ipsa suis (Ovid, *Fasti* VI.473-562).

²¹ καὶ γὰρ θεράπαινεν εἰς τὸν σηκὸν εἰσάγουσαι ῥαπίζουσιν, εἰτ' ἐξελαύνουσι καὶ τὰ τῶν ἀδελφῶν τέκνα πρὸ τῶν ἰδίων ἐναγκαλίζονται ... (Plutarch 1829 *Camillus*, v.2).

²² Διὰ τί παρὰ τῇ θεῷ ταύτῃ τοῖς μὲν ἰδίους τέκνοις οὐκ εὐχονται τὰγαθὰ τοῖς δὲ τῶν ἀδελφῶν; ... Πότερον ὅτι φιλάδελφος μὲν τις ἢ Ἰνὼ καὶ τὸν ἐκ τῆς ἀδελφῆς ἐτιθηνήσατο, αὐτὴ δὲ περὶ τοὺς ἑαυτῆς παῖδας ἐδυστύχησεν ἢ καὶ ἄλλως ἠθικὸν καὶ καλὸν τὸ ἔθος καὶ πολλὴν παρασκευάζον εὐνοίαν ταῖς οἰκειότησι; (Plutarch 1925 *Moralia* 267e (*Quaest. Rom.*))

These rites involving slave women and child fostering seem rather oblique until one compares the Indic myth of the dawn goddess. Uṣas too was a lingering goddess, and by dawning late, according to the Indic work ethic, she shortened the productive period of the day. For this reason, the authors of the Ṛgvedic hymns thought that she required punishment and so, in the fourth book of the *Ṛgveda*, the warrior god Indra castigated her:

And indeed you have achieved
this manly heroic deed Indra,
that you destroyed the woman,
daughter of heaven, meditating ill...
Uṣas fell down, truly frightened,
from her crushed chariot
when the mighty god had crushed it.²³

To the authors of the *Ṛgveda*, the goddess Uṣas intended to do ill; her crime was meditated, perhaps premeditated. This was no mere thoughtless sleeping-in of a woman in love.

On the other hand, the Greco-Roman goddess was a careless lover, but she was not herself punished. The Romans, as Plutarch writes, had a ritual which involved the beating of a female slave. According to Ovid, female slaves were excluded from her temple. We note that these scapegoated women would have been part of the class which constituted the lowest social order for humans: unfree females, those who could offer the least resistance to scapegoating. What the Greeks and Romans shared with the authors of the *Ṛgveda* was the connection of punishment with the goddess of the dawn.

Indic myth also shares with Roman ritual the concept of substitute child care. In Roman rite, according to Ovid, a woman fostered the children of her sister. Similarly, in Book One of the *Ṛgveda*, the dawn goddess Uṣas and her sister Ratrī, goddess of the night, nurtured the same child:

²³ *Etad gha it uta vīryam,
Indra cakārtha paṇṣyam
striyam yad durhaṇḍyuvam
vadhtr duhitaram divaḥ ...
apoṣā anasaḥ sarat
saṃpiṣṭād aha bibhyuṣt
ni yat sīm śiśnathat vṛṣā (Ṛgveda IV.30.8,10).*

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Night and Dawn, changing color,
united, nurse the same infant;
Glowing he shines between heaven and earth.
May the gods preserve Agni, giver of goods.²⁴

If we ponder the relationship between Uṣas and Ratrī, and Agni, the child whom they jointly nurture, we find that Agni fulfills a dual role: his principal function was that of fire god, and in this role he was connected to Uṣas, and the day.²⁵ But Agni was invoked as two sorts of light:

Two go, having different colors, pursuing a beautiful
destination. One nurses the other's calf.
With the one he becomes golden and independent. With
the other he appears as a shining one, having beautiful
luster.²⁶

As the second orb, the shining, but not independent one, Agni perhaps shone with a "borrowed light." Thus, when he occupied the realm of night — of Ratrī, Agni was most likely the moon.²⁷

And so, in Indic myth, and in Greek and Roman ritual, the child of the dawn was fostered. Rather than searching for the origin of this

²⁴ *naktoṣasā varṇam āmemyāne
dhāpayete śiśum ekaṁ samīct
dyāvākṣāmā rukmo aṅtar vi bhāti
devā agniṁ dhārayan draviṇodām* (1.96.5).

This phenomenon is not necessarily Indo-European. In the Egyptian *Book of the Dead* CXXXIV:11-12, both Isis and her sister Nephthys nurse Horus: "His mother Isis gave birth to him [Ani]; Nephthys nursed him, just as was done by them for Horus [*mes en su mut-f Auset, renen en su Nebt-het, mā ārit en sen en Heru...*]" (Budge 1895:144).

²⁵ In fact, in this hymn, Agni may have functioned as both sun and moon. (See Robbins [Dexter] 1978:Appendix).

²⁶ *dve virūpe carataḥ svarthe anyānyā vatsam upa dhāpayete.
harir anyasyām bhavati svadhāvānc chukro anyasyām dadṛṣe suvarcāḥ*
(*Rgveda* I.95.1).

²⁷ Thus, the moon in Old Indic was represented by two different deities, Agni (in special cases) and Soma. Furthermore, in Greece both Memnon and Menelaus may have been, in origin, gods of the moon, or at least *doubles entendres* for the moon. Memnon would have been Moon, son of the Dawn, and Menelaus would have been Moon, husband of the Sun-Maiden Helen.

ritual in matrilineal fostering systems, I believe that we should look instead at the multiple functions of the shining god, he who dwelt in the realms of both night and day.²⁸

Thus southern Indo-European dawn myth and ritual share several features, including the tardiness of the dawn, her punishment — or the punishment of her substitute — and the fostering of her child. Although the Baltic dawn is also tardy, again, excuses are made; she is never harassed, never attacked. She fares better than her southern sisters.

Although it is difficult to explain the scapegoating among the southern Indo-Europeans, one can find differences between the northern and the southern Indo-European sun deities; these differences may shed some light on the differing treatments of the Dawn.

In several Indo-European cultures there are found myths of a sun maiden, daughter of the sun. In Latvian and Lithuanian she is Saules Meita, "young girl of the Sun"; in Old Indic she is Sūryā, literally "female sun"; and in Greek, albeit transformed, she is Helen, "the Radiant One,"²⁹ wife of Menelaus and lover of Paris of Troy (Dexter

(See Dexter 1984:142).

²⁸ H. I. Rose, (1934:156-58) correctly argued against interpreting this myth in terms of sister fostering. Rose believed that "the attempts to connect [the praying of the women at the Matralia for their sisters' offspring] with any sociological phenomenon are purely absurd." Indeed, it is not necessary to interpret the ritual in sociological terms, only in terms of the shared nursing which took place in this particular myth. Apparently, Rose did not know of related myths, such as that of Uṣas and Ratrī; he therefore tried to explain the myth of Mater Matuta in linguistic rather than in sociological or comparative mythological terms. He posited the notion that women prayed for *pueri sororii*, "adolescent children," deriving *sororii* from the Proto-Indo-European root *syer*, "to swell, to mature" (of pubescent or adolescent children); he thus preferred *sororii* as a textual reading rather than *soror*, "sister." In fact, Rose did not believe that Mater Matuta was a dawn goddess, so he saw no need to interpret the dawn myth which was attached to her.

²⁹ Helen "burns homes" (πύμπρησι δ' οἴκους) through her great beauty (Euripides, *Trojan Women* 893-94). Thus, there may have been a folk-etymological association with PIE **suel-*, 'to burn' (Dexter 1984:138). Cf. also Gk. εἶλη, ἔλη 'warmth of the sun'; ἐλένη, 'torch'. However, see Huld (1986) for a compelling discussion of a feminine PIE **seAueI* beside neuter

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1984:137-44). Saules Meita, in various myths, had two sets of suitors; in a Latvian *daina* she was to marry the Dieva Dēli, the divine twin “sons of God”:

The silver cocks are crowing,
beside the golden stream.
They were rousing the Dieva Dēli,
suitors for Saules Meita.³⁰

In another Latvian *daina*, she marries the moon:

Meness [the moon]
was wedding Saule's daughter ...
He asks me to join in the bridal train ...
now I can gallop hard
in company with the Dieva Dēli.³¹

The Old Indic sun maiden, Sūryā, was daughter of the sun, Sūrya,³² who was sometimes called Savitṛ, the stimulating power of the sun. Sūryā also had two sets of suitors — the divine twin Aśvins, of whom it was sung: “You were the lords of Sūrya's daughter,”³³ and Soma, one of whose functions was that of moon god.³⁴

Soma was the bridegroom;
the groomsmen were both Aśvins

**syor/n-*, which had been displaced in the Balkans by derivatives of **syel-*.

³⁰ *Sudrabiņa gaiļi dzied
zeltupītes maliņā
Tie piecēla Dieva dēlus,
Saules meitas preciniekus.* (Hatto 1965:702, #15 = Jonval 1929 B.

34008)

³¹ *Mēness nēma Saules Meitu
Lūdza mani vedībās ...
nu varēju droši jāt*

Dieva dēlu pulciņa (ibid. 701 #11 = Jonval (1929:B.33865).

³² Sūryā is the feminine counterpart of Sūrya.

³³ *patī bhavatah sūryāyāh* (*Rgveda* IV.43.6).

³⁴ Soma was both the moon and the soma-plant which the moon nourished: cf. *Rgveda* I.91.17: *ā pyāyasva madiṁtam soma viśvebhir aṁsubhiḥ*. (Swell up, oh most intoxicating Soma, through all (your) filaments). The “swelling” of Soma may be interpreted as the waxing of the moon; the filaments of the soma plant are also, by analogy, a metaphor for Soma's moon beams.

when Savitṛ bestowed his promised Sūryā
upon her willing husband.³⁵

The Greek Helen, too, was closely associated with the “sons of Zeus, the sky god,”³⁶ the Dioskouroi, albeit as sister rather than betrothed. Although there is no myth in Greek regarding their courtship of Helen, they, just as the Dieva Dēli and the Aśvins, at least tried to act as groomsman:

Indeed, Castor and mighty Polydeuces would have worked hard
to make [Philoctetes] their brother-in-law,
but Agamemnon, son-in-law [to Helen’s father Tyndareus]
wooed her for his brother Menelaus.³⁷

Although Helen’s husband, Menelaus, did not receive the Indo-European moon mythology, yet *mēn* may well have been taken as a *double entendre* for *mēn*, the Greek word for ‘moon’ (Dexter 1984:139-40). Although the word for moon has a long-ē in most Greek dialects, in one Greek dialect, a phonetically as well as orthophonetically short form existed. The Ionic form was *μεις*, from **μενς*, with a shortening of the vowel before a heavy consonant. The existence of this short vowel form may have caused some ambiguity in form as well as meaning; thus, from the oral recitation of the first part of the name *Mene-laus*, one might have heard both “to be steadfast, to be resolute” and “the moon.” We should also recall that Homer wrote the *Iliad*, the earliest Greek source for Helen and Menelaus, in the Ionic dialect. And finally, stelae dating from the early centuries CE, in present-day Turkey, attest to the worship of the Indo-European moon god Men (See Godwin 1981:figs. 128, 131, 136).

³⁵ *Somo vadhūyur abhavad aśvināstām ubhā varā*

sūryām yat patye śamsantīm manasā savitādadāt (Ṛgveda X.85.9).

In this long wedding hymn, which appears quite late in the *Ṛgveda*, Sūryā is the divine metaphor for the typical bride. Although Savitṛ is cited as father of Sūryā here, it is clear that this is an epithet of Sūrya, for the hymn begins with this god: The earth [is] supported by truth; heaven [is] supported by Sūrya. (*satyenottabhitā bhūmih sūryenottabhitā dyauḥ*).

³⁶ The Lithuanian “sons of god” were the *Dievo sūneliai*.

³⁷ *καὶ νῦ κε δὴ Κάστωρ τε καὶ ὁ κραπτερος Πολυδεύκης
γαμβρὸν ποιήσαντο κατὰ κράτος· ἄλλ' Ἀγαμέμνων*

γαμβρὸς ἐὼν ἐμνήτο κασιγνήτῳ Μενελάῳ (Hesiod Catalogues of Women 68:13-15).

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Thus, in Indo-European myth, the child of the sun is clearly female. There are distinct parallels in Old Indic and Baltic myth, and vestiges of the myth in Greek. The personification of the sun itself, however, differs in gender. In northern and eastern Europe — in Baltic, Slavic, Celtic and Germanic — the sun is personified as a goddess: Lithuanian *Saulė*,³⁸ Latvian *Saule*, Slavic *Solntse*,³⁹ Gothic *Sunno* (*sunno* can be either feminine or neuter), Old Norse *Sól*, Old Irish *Sul*, *Sól*.

Snorri, in the Old Norse *Prose Edda*, lists the sun among the goddesses: "Sól and Bil are counted among the goddesses."⁴⁰ Earlier in the *Edda*, he describes her. In the days before the reckoning of time, as the *Sibyl's Vision* describes it,

Sól did not know it —
where she had her halls,
Moon did not know
how much strength [lit. 'what of power'] he had,
Stars did not know it —
where they had [their] dwellings.⁴¹

And when the world was given order, Sun was put into the sky. She races across the sky:

Then Gangleri spoke, "The Sun moves quickly and practically (thus) as if she were frightened, nor would she then hasten more [if it were] that she was afraid of her death." Then the High One answers: "that is not strange,

³⁸ According to Gimbutas (1963:201), *Saulė* is depicted in art as a ring, a circle, a rosette, a daisy, a wheel. This would indicate, I believe, that the Indo-European wheels shown in rock-engravings are not necessarily the depictions of a male deity.

³⁹ In some Slavic myths the moon is male and the sun is female; in others, the moon is female and the sun is male. See Alexandrow (1923:286).

⁴⁰ *Sól ok Bil eru talðar með Ásynjum*. (Snorri *Prose Edda*, *Gylfaginning*:36).

⁴¹ *Sól þat ne vissi,
hvar hon sali átti;
máni þat ne vissi,
hvat hann, megins átti;
stjörnur þat ne vissu,
hvar þær staði áttu*. (*Gylfaginning*:8). Snorri quotes this verse from the *Poetic Edda*.

that she runs very [fast]; the one who seeks her [is] advancing closely [upon her], and she has no means of escape, except to run away."⁴²

The Sun flees, for the wolf Skoll chases her, and he will ultimately overtake her. See above on the frightened Uṣas and the warrior god, Indra.

There is another possible sun goddess in the Old Norse Eddas: the giantess Gerð shines; the young god Freyr sees her and exclaims:

In the court of [the giant] Gymir, I saw walking along
a maiden for me to desire;
her arms shone; and from them
[shone] all the air and sea.⁴³

Gerð was infused with light:

When she reached up her hands and opened the door
before her, then her hands shone out both in the heavens
and upon the sea, and all the world was illumined from
her.⁴⁴

Another solar goddess is the Irish Grainne (Grian), the wife of the hero and chief of the land, Finn. Grainne eloped with Diarmaid on her wedding night. Her elopement may be compared to that of the Greek Helen; that is, the Sun is seduced by, or seduces, a man not her husband, and she runs away from her land and people. The texts show evidence that Grainne is the Sun; Old Irish, *grian* is glossed by the Latin word for sun, *sól*. (Quin 1953.S:334, 428).

From Roman Celtic Britain come inscriptions to Sulis, "Sun." She was an indigenous goddess of healing at Celto-Roman Bath, called

⁴² Þá mælti Gangleri: "Skjótt ferr sólin, ok nær svá sem hún sé hrædd, ok eigi mundi hon þá meirr hvata gongunni, at hon hræddist bana sinn". Þá svarar Hár: "Eigi er þat undarligt, at hon fari ákaflega; nær gengr sá, er hana sækir. Ok engan útveg á hon nema renna undan. (Snorri, *Prose Edda*, *Gylfaginning*:12).

⁴³ Í Gymis gǫrðom ec sá ganga

mér tíða mey;

armar lýsto enn af þaðan

alt lopt oc lǫgr (For *Scírnis* 6).

⁴⁴ ok er hon tók upp hǫndum, ok lauk hurð fyrir sér, þá lýsti af hǫndum hennar bæði í lopt ok á lǫg, ok allir heimar birtust af henni (Snorri Sturluson, *Prose Edda Gylfaginning*:37).

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in antiquity Sulis Aquae, “the waters of Sulis,” and she was identified with the Roman Minerva.⁴⁵

Thus, in Baltic, Slavic, Germanic and Celtic one finds female sun deities. On the other hand, in the south, the Indo-European sun deities were male. In the Homeric Hymn to Demeter, Demeter hears that the sun god, Helios, who “watches over both the gods and men,”⁴⁶ has seen the rape of her daughter Persephone; she addresses him: “Helios/ tell me, truthfully, about my dear child.”⁴⁷ Helios tells her that, although he greatly pities her in her grief for her daughter, yet “Hades, the ruler of many, is not an improper son-in-law for you, from among the immortal gods.”⁴⁸

The Greeks and Romans had multiple sun gods; Apollo, in both cultures, accrued many functions, and, by the fifth century BCE, he appeared in a few texts as a personification of the sun. Around 400 BCE, Timotheus invoked Apollo:

You, striking the eternal heavenly sphere
with (your) shining beams, Oh Helios,
send the arrow, attaining its aim, against the enemy,

⁴⁵ See Green (1976:80, 188 and 1992:200). Sulis was also worshipped in multiples, as the Suleviae (Green 1976:172, 188, 216). According to Brenneman and Brenneman (1995:4 *et passim*), the sun was associated with water in Ireland as well as in Celtic Britain. For example, the *Tobar Súil*, the “well of the eye,” is known by the names of several saints, including that of Saint Bridget. The symbol of the reverse swastika, which has been associated with the sun, appears at this well. Thus the word *súil*, almost homophonous to that for the sun, *sól*, *sul*, is associated with the sun-symbol of the goddess Brigid. The confluence of water and sun/fire concepts is a common one; the Irish goddess Brigid was patroness of sacred wells, and she gave her name to the rivers Brighid in Ireland, Braint in Wales and the Brent in England (see Dexter (1990:165). On the other hand, as we are told by Geraldus Cambrensis (*De igne a Brigida sua nocte servato*), after she became canonized in Christian Ireland, Bridget and her attendant nuns were said to have guarded a perpetual fire. (See Dexter *ibid.*)

⁴⁶ Ἡέλιον ... θεῶν σκοπὸν ἥδ' ἐ καὶ ἀνδρῶν ... *Homeric Hymn II* [Εἰς Δημήτραν] 62.

⁴⁷ Ἡέλι' ... νημερτέως μοι ἔνισπε φίλον τέκος ... (*ibid.* 64, 71).

⁴⁸ ... οὐ τοι ἀεικῆς

γαμβρὸς ἐν ἀθανάτοις Πολυσημάντῳ Ἀιδωνεύς (*ibid.* 83-84).

from your bowstrings, Oh Paian!⁴⁹

We have already discussed the Indic sun god Sūrya, father of the sun maiden Sūryā.

Thus, in northern Indo-European mythologies, one extra class of deities, the deity of the sun, has feminine gender. Further, in Baltic myth, the female deities seem to be as powerful as the males. For example, the Baltic goddess of fortune and destiny, Lithuanian Laimė, Latvian Laima, determined the course of one's life, and she shared with the heavenly god Dievas the determination of who was to live and who was to die:

God Passes the day with dear Laima,
[determining] who must die,
who will live under the bright sun.⁵⁰

Whether this mythological equalitarianism is a function of the resurfacing of the indigenous substratum or whether this is a product of Indo-European assimilation to the substratum is difficult to determine.

In conclusion, the Baltic goddesses of the Dawn — Aušra, Aušrine, Aušrele and Auseklis — are not punished for their tardiness and their reluctance, whereas the Indic Uṣas and the mortal stand-ins for the Roman Mater Matuta are castigated. The female gender of the sun deity, parent of the sun maiden, may offer a clue to this difference in treatment, since this Baltic female deity parallels a male deity in the Greek, Italic and Indic pantheons. It is noteworthy that the goddess Laima, just as the Roman Fortuna,⁵¹ is responsible for both the good and the bad fortunes of mortals:

⁴⁹ σὺ τ' ὦ τὸν ἀεὶ πόλον οὐράνιον
λαμπραῖς ἀκτίσ', "Ἄλιε, βάλλων
πέμψον ἐκαβόλον ἐχθροῖσι βέλος
σῶς ἀπὸ νεύρας, ὦ ἕε Παιάν (Edmonds: Timotheus' *Fragment* 15).

Here, Apollo is addressed as Helios as well as the usual Paian.

⁵⁰ Dievam dienī' i aizgāja,
Ar Laimiņu runājot,
Kam būs mirt,
Kam dzīvot
Šai balta saultī (Biezais 1955:129 No. 27684).

⁵¹ With regard to the Roman Fortuna, it is of interest that among her attributes are a cornucopia, a sphere and a wheel (Guirand 1959:213). The Celtic Fortuna too has been represented with an oversized wheel, possibly a

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Where did you sit, dear Laima,
when I was born from the mother?
Did you sit on the seat of good luck
or in a little pool of tears?⁵²

But, whereas Fortuna is described as fickle, such terminology is never used with Laima. Her honor is unchanging. Thus, the Baltic Dawn may not have been scapegoated because the Baltic female deities were held in more honor than the southern Indo-European female deities; they were not subordinated to the gods. Therefore, there would have been no precedent for the punishment of the female.

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solar image (Green 1991:97).

⁵² *Kur, Laimiņa, tu sēdēji,
Kad es dzimu māmiņai?
Vai sēdēji laimes krēslā
Vai asaru lāmiņa?* (Biezais 1955:123, No. 9208.1).

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Wulfstan: An Old English Document and its Indo-European Implications

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Tradition has it that King Alfred himself translated into Old English the fifth century Latin work *Historia adversum Paganos* by Paulus Orosius. To that translation, the voyage accounts of two Germanic navigators were added: Ohthere, who had sailed around the tip of Scandinavia into the (now Russian) White Sea, and Wulfstan, who in his turn, had crossed the Baltic Sea from Denmark to what he called Estland. Both of the navigators were King Alfred's contemporaries, and they seem to have reported in person before the king.

I chose Wulfstan because I find his account significant not only for Anglistics and for the early medieval Germanic-Baltic relationship, but also for general Indo-European studies. I also chose that text because, in her first major academic work (1946:164-65), Marija Gimbutas used a German translation of it as an argument in her discussion on Lithuanian funeral rites. In the present paper I will make use of the original Old English version (as rendered in Whitelock's 1970 edition of Sweet's *Anglo-Saxon Reader*).

Wulfstan says he once left the Danish port of Hedeby (*Hæðum*) and sailed east, first to the mouth of the Vistula (*Wisle*) in the land of the Slavs (*Winedas* — cf. Gmc. *Wenden*), then to a region called *Witland*, which "belongs to the Estians" (*belimpeð tō Estum*). Thus, towards the end of the ninth century, the Baltic population visited by Wulfstan still bore a name (*Este* in Old English) which clearly recalls the Aestii mentioned by Tacitus (*Germania* 45) at the end of the first century. And, we shall see, that was not the only sign of stubborn persistence in that corner of the world.

Wulfstan opens the most consistent part of his story by observing that Estland is "very big" (*swyðe mycel*), and that in it there are many cities (*byrg*), each with its own king (*cyningc*, *cyning*, *kyning*). Then, some economic facts are given. There is much honey (*hunig*) there, and the natives do a lot of fishing (*fiscað*). After which, Wulfstan (unaware of the treasure he was preparing for future Baltists

and Indo-Europeanists) gives some details that we now may label as socio-political and ethnographic: the king and "the potentates" (*þā rīcostan*) drink "mare's milk" (*mýran meolc*), while "the needy and the slaves" (*þā unspēdigan and þā þēowan*) prefer mead (*medo*). Among other things, Wulfstan appears to have had his own drinking regrets while in Estland, since he discreetly complains that, for all the abundance of mead, "there is no ale whatsoever brewed with the Estians" (*ne bið ðær nænig ealo gebrowen mid Estum*).

What then follows is a minute (though not very coherent) description of the local funeral rite, or at least the one specific to the Estian upper class. We are told that the custom (*ðēaw*) was for the dead to remain unburned (*unforbærned*) quite long (were they embalmed?), while their kinsmen and friends went through a lot of "feasting and playing" (*gedrync and plega*). Meanwhile, the fortune (*fēoh*) of the deceased was duly divided into portions of unequal size, to be won through a special horse race. The description of all this is quite complicated, but the main idea certainly is that the rider with the swiftest horse was bound to get the biggest portion of the deceased's heritage. And Wulfstan adds that is why "those swift horses" (*þā swifstan hors*) are excessively expensive in Estland. The last scene is presented: when they take the dead man out of his house (sometimes half a year after his death!), they burn him "with his weapons and raiment" (*mid his wæpnum and hrægle*). And if, after that, any bone be found unburned, "they have to make a lot of atonement for it" (*hī hit sceolan miclum gebētan*).

At the end of his story, after the description of what appears to have been the Estian dominant funeral practice, Wulfstan adds that the Estians (all?) possess the 'skill' (*mægð*) of producing 'chill' (*cyle*), which is also used in funerals. By that means, the dead may just lie there, and they "do not rot" (*ne fūliað*), and even two barrels of ale (so, was there ale in Estland after all?) could be made to freeze over by that skill, "be it summer or winter" (*sam hit sý sumor sam winter*).

Marija Gimbutas rightly sensed the significance of Wulfstan for the Baltic ethnogenesis. Aspects such as the utmost importance of horses, or the practice of cremation with the ninth century (upper class) Estians were in keeping with some of the main standpoints in her doctoral dissertation (for example: "*Die Bestattungsart des litauischen Stammes ist durch Brandbestattung und die Pferdegräber charakterisiert*" (Gimbutas 1946:173). However, the Wulfstan document can also be analyzed from the more general points of view

first expressed by Marija Gimbutas in *Die Balten* (1983) and then resumed in her criticism of the Gamkrelidze-Ivanov theory. There she reasserts that the Baltic ethnogenesis is “the least controversial of all the Indo-European families,” and that (in comparison with a language like Greek) “Baltic is pure, with almost Proto-Indo-European features” (Gimbutas 1985:200). True enough, in many aspects, the Lithuanian of the sixteenth century is more archaic than the earliest recorded Latin, yet the question may arise: Did the strongly Indo-European character of the Baltic phenomenon spring from one source only? I propose that, in this case as in others, the principle of confluence (a Pisani-inspired idea developed in Poruciuc 1992) be observed. That principle — according to which a historical language, or a historical ethnos may be analyzed as the result of confluent factors (“streams”) of diverse origin — finds good illustration in the Estian matter as given by Wulfstan. Let us first pay some attention to Estian drinks.

No wonder the Estian groundlings (i.e. the lower class who must also have represented a demographic majority) preferred mead. Bees and honey certainly meant something for the most archaic inhabitants of the Baltic regions. Even today back-country Lithuanians probably still believe that “*wenn der Bienenvater stirbt, sterben seine Bienen*” (Gimbutas 1946:138), and the abundance of Estian honey mentioned by Wulfstan accounts for the presence of honey in a peculiar Baltic funeral custom: “*Noch bis in unsere Zeit kann man die Spuren der Leichenkonservierung im litauischen Volke antreffen. So wurde z.B. im Preußischen Litauen der Tote heimlich mit gekochtem Honig eingerieben. Damit die Leiche keinen schlechten Geruch verbreiten soll, wird die Nase des Toten mit Wachs gefüllt*” (Gimbutas 1946:166). A civilization with such traditions was bound to have symbolic implications attached to honey, wax and mead.

I am sure Wulfstan had no difficulty with translation in the case of the Baltic term for mead. OE *medo* (referring to the alcoholic beverage made from fermented honey and water) is a most obvious Indo-European relative of Lith. *medūs* ‘honey’ (cf. also Lith. *midus* ‘mead’, which Pokorny (1959 s.v. **medhu*) presents as a borrowing of an unattested Gothic word). In a linguistic age like ours, when many linguists try to get beyond Indo-European borders and to discover “Boreal” or “Nostratic” connections, IE **medhu-* certainly deserves special attention since it reflects a truly inter-oceanic isogloss. To the non-Indo-European correspondents given by Pokorny, loc.cit. (Finn. *mete-*, Lapp. *mïtt*, Mordv. *m’ed*’, Chin. *mī*⁴ ‘Honig’) I may add Hung.

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méz and Japan. *mitsu*, both meaning 'honey'. Such "Nostratic" correspondents reveal an extremely old Euro-Siberian axis. And in such a case it would not be absurd to take into account the possibility of a **medh-* 'honey' already used by the Mesolithic ancestors of the Balts (see Mesolithic nuclei revealed by archaeologists at Narva, Kunda or Osa — cf. Scarre 1988:87). Such a term was then, of course, reinforced by both Indo-European and Finno-Ugrian streams in the area under discussion (see Finn. *mete-*, Lapp. *mítt* and Hung. *méz* above).

What about Wulfstan's *myran meolc*? The fact that it referred to a drink beloved by aristocratic horsemen is exceptional. Wulfstan had no proper Old English term for that, but we may be sure that the natives did have one. In recent times that kind of drink was known to Europeans under the name of *kumys*, and its fundamental ethnographic implication is that it is specific to nomadic horsemen of the Eurasian steppes. As to the age of that "potent milk," the latter is known to have been "the national drink of the Scythians" (Rolle 1989:94). Who then were the ones who introduced "mare's milk" into Estland? Some prehistoric horsemen like the ones which left so many burial mounds ('*kurgans*') in Lithuania? Or the Scythians themselves? Or, for the most recent extreme, some steppe riders like the Avars (who disturbed Eastern Europe during the same fifth century which witnessed the beginning of generalized cremation in the Baltic area, cf. Gimbutas 1946:131)? Wulfstan does not tell us, but we may wonder whether the ninth century dominant horsemen of Estland spoke the same language as the humble mead drinkers. Maybe, at that time, those horsemen, like the seventh century Turkic speaking Bulgarians in Bulgaria (or the twelfth century French speaking Normans in England, for that matter), functioned as a **temporary alien élite**, soon to be assimilated by the native population they had conquered. Anyway, the abstract aspect of it all is that the social elite of Estland when visited by Wulfstan was made of *kumys*-drinkers who ruled over mead-drinkers and who burned their dead, a feature that does not appear to be genuinely of steppe origin.

To crown it all, the last item in Wulfstan's account, namely the skill of (all?) Estians in preserving their dead by artificial "chill," certainly did not reflect the same tradition as that of the intruding cremationists. Chill-making with the Baltics may have been as old as their honey and mead traditions, or at least it represented a closely related vein. One basic aspect of the latter was **preservation** of dead

bodies as long as possible, an idea which is the opposite of body-burning. Preservation by freezing (or by very low temperature) is in fact, like *kumys* drinking and horsemanship, another Scythoid feature of ninth-century Estland. Kurgan human and horse frozen inhumations like the ones of Pazyryk in the Altai mountains (fifth to third centuries BC) have become famous (cf. Rolle 1989:56-57). Recently, we have seen the discovery of a Scythian "princess" or "high priestess," whose body has been preserved by high altitude frost in the Central Asian mountains on the Ukok Plateau (Polosmak 1994).

Speaking of Scythoid features, as early as Herodotus, Scythians were known to make good use of bee produce too. The Father of History tells us (IV, 71) that, whenever a Scythian king died, his body was "enclosed in wax" (after his belly had been cut open, cleansed and filled with embalming herbs). Renate Rolle (1989:29) adds: "Scythians probably used honey as well as wax in the preservation of corpses Honey was also an ingredient in the embalming of Alexander the Great" But Alexander's funeral honey is not the only link between the historical Balts, who, in modern times, still used boiled honey as corpse preservative, and the world to their south. The cremation rite observed by Wulfstan in Estland must have come from that direction too, possibly even through (un-Romanized) Dacians, as Schall (1974) suggested. Such a hypothesis would very much sustain the undeniable Baltic-Balkan links discussed by linguists like Duridanov, Rimša or Hamp. Cremation may have gone north together with the idea of urban life confirmed by Wulfstan's reference to 'cities' (OE *burg* most probably translating a Baltic term like *pīlis* = Greek *πόλις*). Anyway, speaking of the ninth century, it was a period during which we must also take into account a Slavic impact on the Balts (such as that of the allegedly Slavic Dregoviči). I will not, however, insist on such debatable historical aspects.

To go back to our Germanic navigator, I may observe that (however unintentionally) he may also prove useful in the field of the Baltic-Germanic relationship, which has long been well known to linguists (cf. Krahe 1966.1:23-24). Though Wulfstan uses terms of his own Germanic tongue (cf. *burg* above), when he describes Baltic matters, in certain cases those terms must have resembled their Baltic counterparts. In the already discussed case of OE *medo* 'mead' and Lith. *medūs* 'honey', the matter is one of Indo-European genetic correspondence (to which Lith. *mīdus* 'mead' was added, as a borrowing from Gothic, according to Pokorny). But other instances

clearly reflect lexical transfer from Germanic into Baltic. Thus, Wulfstan's *cyning* 'king' must have been an easy translation for a Baltic term close in shape to Latv. *kungs* 'lord, master', a Germanic loan word (as also are Lith. *kunigas* 'priest', *kunigaikštis* 'prince', and also Finn. *kuningas* 'king'). Also, the Old English term used by Wulfstan to designate the Estian upper class, *þā ricostan* (meaning, at that time, 'the most powerful' rather than 'the richest'), must have had some Baltic correspondent of Germanic origin too. It is enough to mention attestations like OPrus. *rikijs* 'lord, master' and *riks* 'kingdom' (cf. NHG *Reich*), the latter having a Lithuanian counterpart, *rikis* (cf. Krahe 1966.1:24), all showing a very early Germanic impact on Baltic.

Let us return to drinks. The existence of OPrus. *alu* and Lith. *alus* for 'beer' may make us doubt that there was no ale brewed in Estland when Wulfstan went there (maybe he simply could not accept the local brew as proper ale!). Those Baltic terms have also been considered as Germanic loans (together with Finn. *olut* and OCS *olъ* — cf. Pokorny 1959, s.v. **alu-* 'bitter, Bier, Alaun'). Speaking of Wulfstan's "complaint," a lack of beer would appear as unusual in the case of the ninth century heirs of the Aestii, about whom Tacitus (*Germania* 45) had said eight centuries earlier "They cultivate grain and other crops with a patience quite unusual among lazy Germans" (which they certainly were not!). Farming has meant barley and beer too, from Mesopotamia and Egypt to Scotland. For all the *kumys* and mead, a total lack of beer with the ancestors of modern Balts, whose heavy beer drinking at funeral feasts is notorious (cf. Gimbutas 1946:163 — "*mehr als eine Tonne Bier*"!), would be quite unusual. Perhaps in the coastal area (Prussia or Courland) visited by Wulfstan, he happened to meet only drinkers of *kumys* and mead, which drinks he also duly interpreted as social markers. Whether Lith. *alus* 'ale' reflects not a mere Germanic loan but a special brewing technology which the Balts learned from early Germanic intruders is something I leave for specialists to establish.

It is time to draw some conclusions which will preserve the interdisciplinary character of this paper as a whole.

The "almost Proto-Indo-European" character of the Baltic languages, and their "affinities with Indo-Iranian" (cf. Gimbutas 1985:200) are not surprising if we take into account that, from prehistoric Kurgan people to the *kumys*-drinking horsemen of Wulfstan's time, there were successive intrusions of steppe pastoralists

into the Baltic area. It is more difficult to establish whether there was any linguistic affinity (besides the rather obvious anthropological one) between those pastoralists and the Mesolithic/Neolithic mead-drinking natives who represented the primeval demographic basis of the Balts.

Besides the genetic correspondences between Germanic and Baltic, significant borrowings from Germanic (such as *kungs* and, less certainly, *alūs*) added to the Indo-European substance of Baltic. As regards cremation, what the Germanic warlike (Beowulf-like) pre-Christian upper class did with their dead obviously resembled what their ninth century Estian counterparts did to theirs. However, Dacians are also known to have been cremationists, and they have been proposed as important contributors to the making of the "Lettoslawen" (cf. Schall 1974). That proposal is in good agreement with the now well-known Baltic-Balkan linguistic affinities.

At the time of Wulfstan's visit, the Baltic peoples as we know them must have still been in the making. I suppose that, like the English who had to assimilate Danes and Normans, the archaic mead-drinkers of Lithuania and Latvia had to deal with their own invaders (be they steppe *kumys*-drinkers, or Carpathian body-burners, or warlike Vikings). It must have taken some time, but, in 1420 (only seven years after the Frenchman Ghillebert de Lannoy had discovered that cremation was still generally practiced in Courland), Grand Duke Vytautas could assert the linguistic and ethnic unity of Lithuania ("*unum ydeoma et uni homines*" Gimbutas 1946:106). Thus, a process that had started during the Baltic Neolithic (with a lot of Mesolithic relics in it) and went on through the not very peaceful Bronze and Iron Ages, eventually reached the ethnolinguistically coherent aspect that was to be labeled simply as *The Balts* by Marija Gimbutas.

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Ancient Balts according to Ethnoinstrumentological Data

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In tracing the origin of the ancient musical instruments of Northern Europe, the most important question of this research is who were the earlier or the first users of these instruments? Were they the Balts, the Germans, the Slavs or the Finns? This question is especially pertinent for researching the ethnogenesis of the Balts.

In general, the laws of distribution relate to ethnic musical instruments. As a result of comparative research, the author has come to the conclusion that ancient musical instruments were spread throughout the world in patterns not coinciding with the boundaries either of the present nations or even with the boundaries of ethnic groups. The instrument-related regions are vast geocultural areas surrounding large water reservoirs, in the mountains, woods, marshy plains, steppes and deserts. Old songs, games, round dances, buildings, national costumes and other phenomena of ethnoculture have spread in a similar way. The most characteristic ethnoinstrumental areas should be considered the territories of the Mediterranean Sea, the Balkans, the Middle East, Transcaucasia, Northern Europe, Western Europe, Central Asia, Siberia and the Far East and Indo-China. Everywhere within these regions, nations of different ethnic groups, and frequently different faiths, live; however, ancient musical instruments are almost the same within each area.

The regions of the distributions of ancient instruments coincide a great deal with the boundaries of the earliest archaeologically revealed cultures. The types of instruments are also situated in the local regions of these cultures. The fact that this coincidence cannot be accidental is also proved by archaeological remains of musical instruments which have hitherto been found in different parts of the world, from as early as the Palaeolithic. Ethnoinstrumentologists are of the opinion that they correspond to the widely used ethnographic models and show that ethnic musical instruments have changed very little since the Stone Age, if at all.

Ancient Balts: Ethnoinstrumentological Data

The roots of origin, the dissemination and the use of various ethnic musical instruments most probably reach back to some earlier period than the time of the foundation of nations and ethnic groups. This is also well shown by the common ethnic musical instruments of the ethnic groups of Northern Europe — the Balts, Germans, Slavs and Finns. The former three, the Balts, Germans and Slavs, are Indo-Europeans, while the Finns belong to the distinctive family of the Uralic languages.

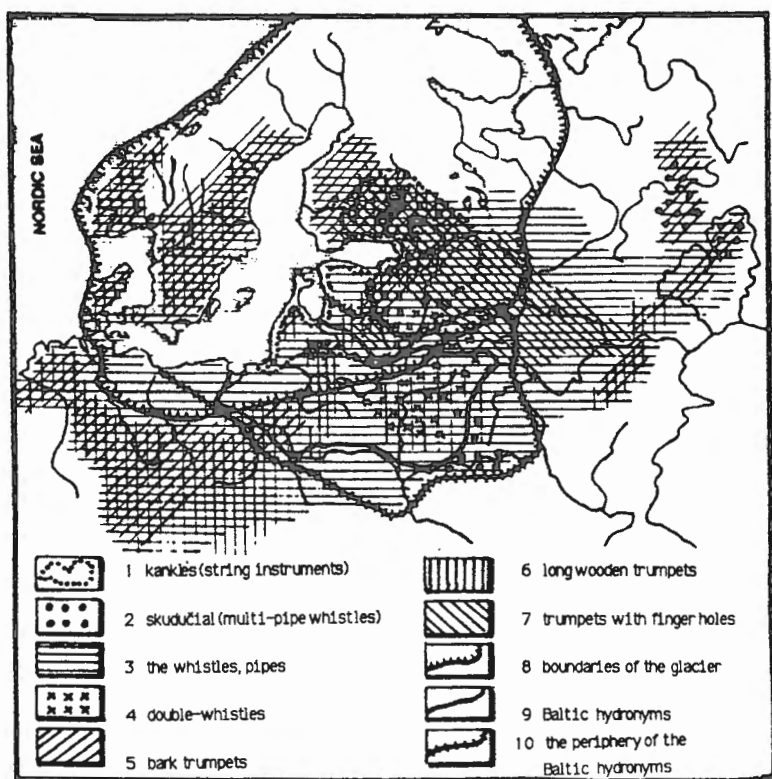


Fig. 1: The distribution of the ethnic instruments of Northern Europe (after Apanavičius 1992:ill. 1.).

As shown by the data contained in the author's investigation into the distribution of the ancient musical instruments of Northern Europe, identical instruments of Northern Europe have spread from

Scandinavia, northern Holland, northern Germany, Poland, Belarus and northern Ukraine to the lands of the Mari and Mordovians. In the southeast this area includes the Kursk and Bryansk regions and in the north Finland, the lands of Karelians, Komians and Udmurtians (Fig. 1). The area of the greatest extent of these instruments coincides with the incidence of the Indo-European Corded Ware culture (dated to the end of the third millennium BC) and of the Finno-Ugrian Pit-Comb Ware culture (fourth to second millennia BC) (Fig. 2). The incidence of finds for some types of instruments also links them with still earlier cultures, some dating from the tenth to fourth millennia BC. The distribution of the stringed instrument called the *kanklės* in Lithuanian almost coincides with the area of the fourth millennium Narva culture. The territory of trumpets with holes coincide in many respects with the early Neolithic Valdai and Upper Volga cultures, as well as with the

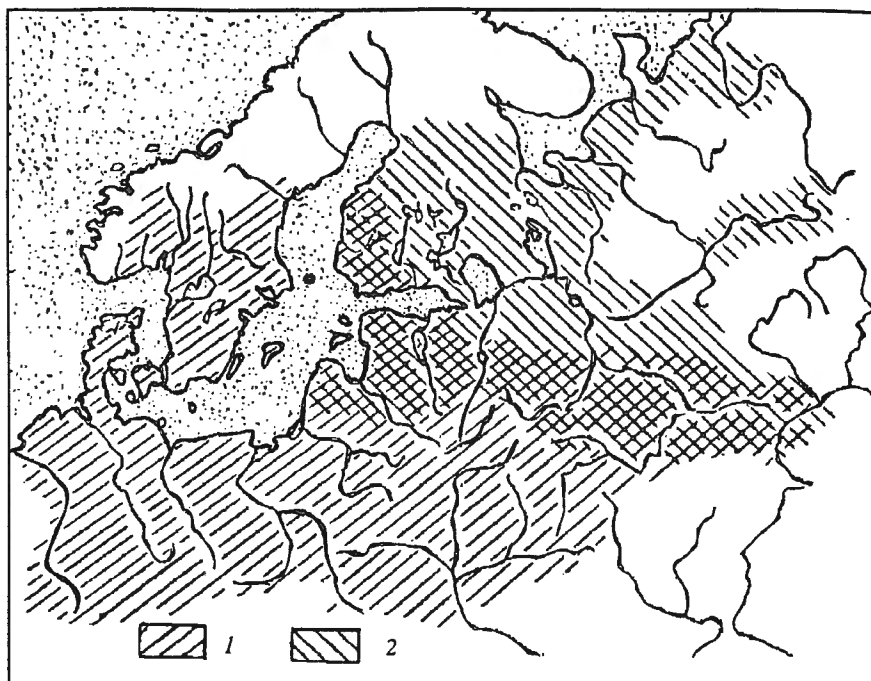


Fig. 2: 1) The spread of Corded Ware and 2) Pit- and Comb-marked Ceramic cultures in Northern Europe (after Rimantienė 1984: ill. 104; Tretyakov 1972: ill. 43; Pankrushev 1978.II: ill. 1; Meinander 1974).

late Neolithic Fatyanovo culture which had the same or a similar geographical location in later times. The area of the use of double whistles more or less coincides with the early Neolithic Dnieper-Donets, as well as the spreading of the late Neolithic Upper Dnieper culture (Figs. 3 and 4). There are many archaeological specimens of northeastern European ancient musical instruments from these mentioned periods.

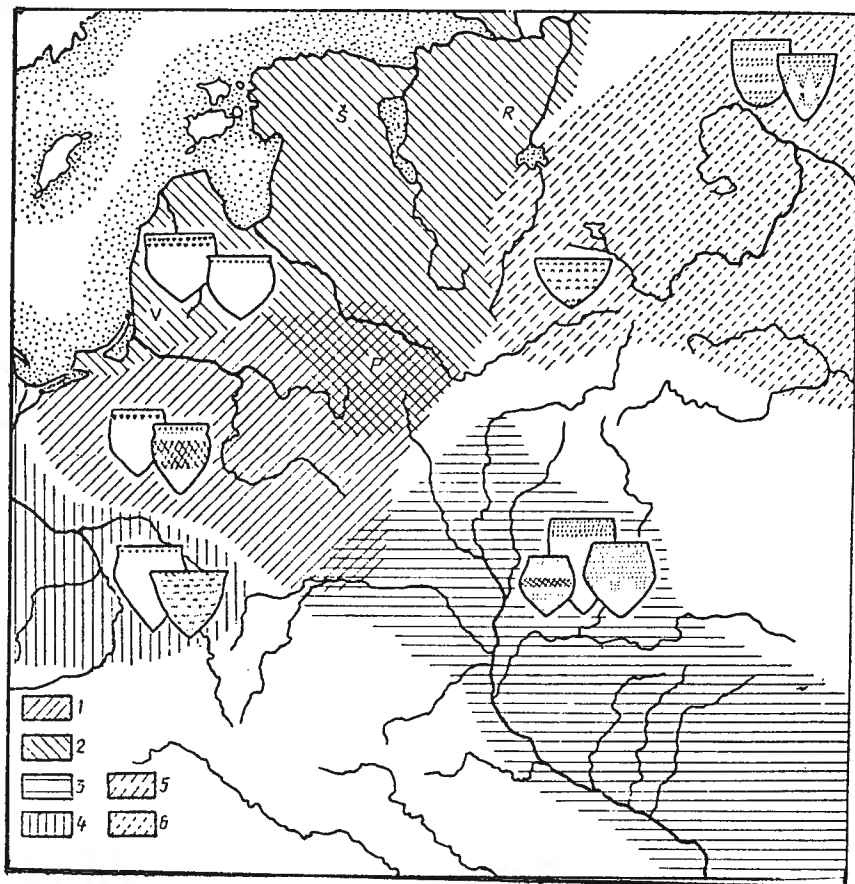


Fig. 3: The cultures of the early Neolithic of North-Eastern Europe: 1) Nemunas, 2) Narva, 3) Dnieper-Donets, 4) Polish Pit- and Comb-marked = the Dnieper = the Elbe, 5) Valdai Hills, 6) the Upper Volga (after Rimantienė 1984: ill. 62).

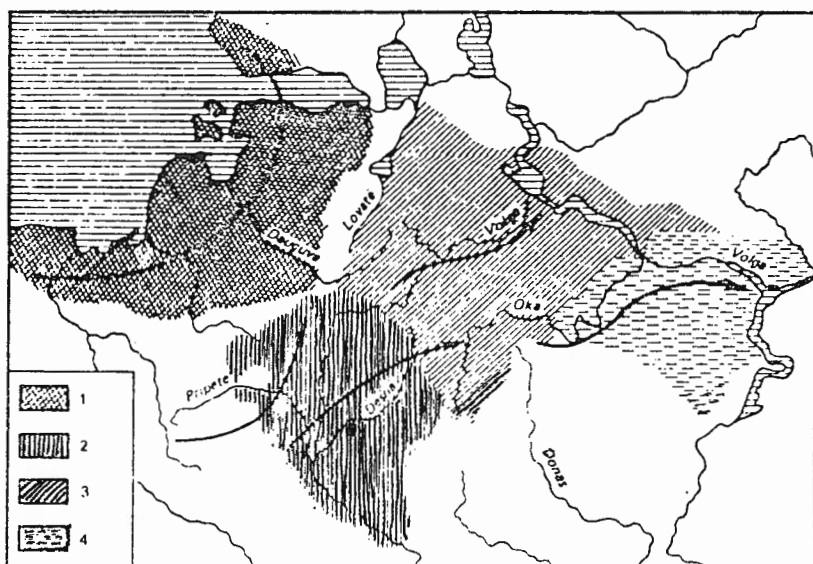


Fig. 4: The variants of the Proto-Baltic cultures of the Neolithic of northeastern Europe about 2500-2000 BC: 1) the Corded Ware of the Pamarių and the Eastern Baltic region with the heritage of the Narva culture, 2) of the upper and the middle reaches of the Dnieper, 3) Fatyanovo, 4) Balanovo (after Gimbutienė 1985: ill 20).

In Northern Europe two regions may be singled out with respect to the spread of musical instruments. The larger one, from Scandinavia through northern Holland and Germany, Poland and Belarus, southern and eastern Lithuania, eastern Latvia and eastern Estonia, reaches the Karelian Isthmus and stretches away to the east and beyond the Volga. In this territory, there lived part of the West Germanic tribes and almost all of the North Germanic tribes, a part of the Western and Eastern Slavs, a part of the Balts, a part of the Baltic Finns and all the Volga and Permic Finns. This territory may be called a “wind” instrument culture (Fig. 5).

The region near the eastern shore of the Baltic, where aerophones and idiophones occur but the stringed instrument *kanklės* was very widely used, is much smaller and may be called a “*kanklės*” culture (Fig. 5). Three basic types of *kanklės* are distributed here

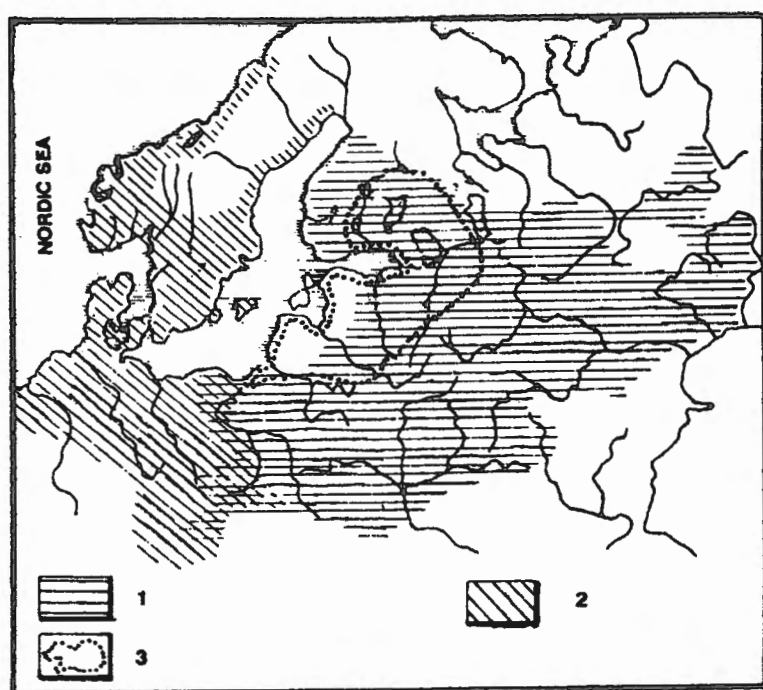


Fig. 5: Northern European ethnoinstrumental cultures: 1) the eastern part of the "wind" instruments, 2) the western part of the "wind" instruments, 3) "kanklės" culture (after Apanavičius 1992: ill. 2).

(Fig. 6). The eastern part of the "kanklės" culture impinges upon the region of the big wind-instrument culture and together makes up its very peculiar northwestern border. The region of the spreading of the *kanklės* includes the lands of all Baltic Finns and Letts. In addition, northwestern Russians and Lithuanians also live here (Fig. 7). The latter group is divided into two parts by the limit of the distribution of the *kanklės* into a western and northern "kanklės player" region and a southern, southeastern and eastern "blower" region (Fig. 8).

The differences of Northern Europe's ethnoinstrumental territories may be reflected by the origins of the names of the trumpets as well (Fig. 9). The German term *Horn*, which has spread in the western part of the wind-instrument culture, is usually derived from the Indo-European root **ker-*, 'deer' as, for example, was done by F.

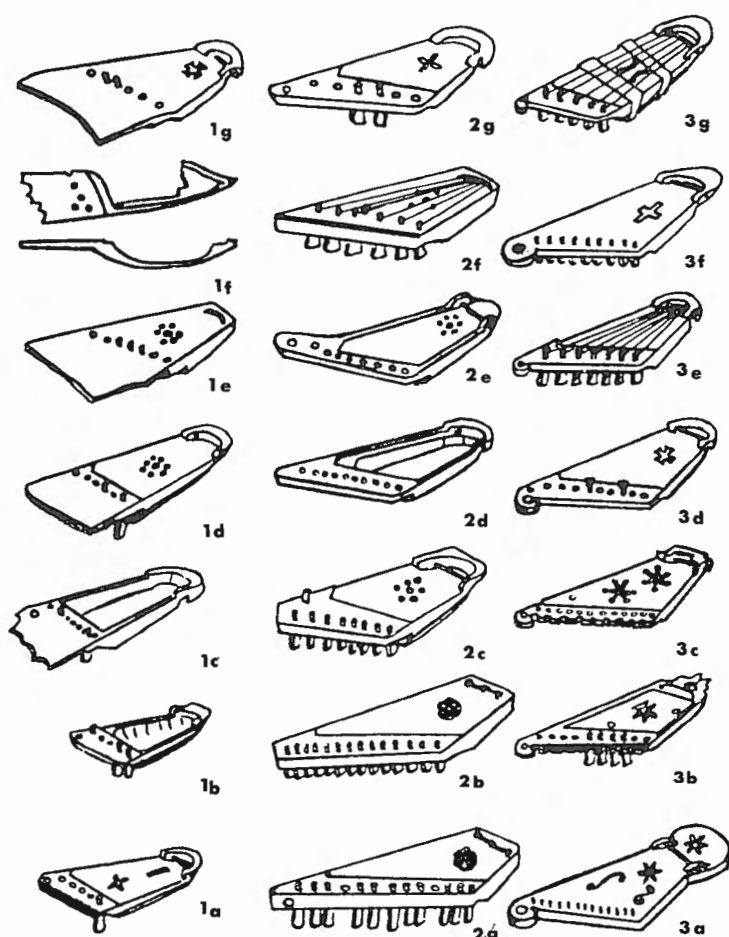


Fig. 6: The *kanklės* of the Baltic nations: 1a) Lithuanian *kanklės* of northeastern Aukštaičiai, 1b) Lettish *kokle* from Augšzemē, 1c) Latgalian *kokle*, 1d) Setu Estonian *kannel*, 1e) northwestern Russian *gusli*, 1f) antique northwestern Russian *gusli*, 1g) Vepsian *kanuele*; 2a) Lithuanian *kanklės* from Žemaičiai, 2b) Lithuanian *kanklės* from northwestern Aukštaičiai, 2c) Lettish *kokle* from Zemgale, 2d) southern Estonian *kannel*, 2e) southern Estonian *kannel*, 2f) Votian *kannel*, 2g) Izhorian *kanuele*; 3a) Lithuanian *kanklės* from Suvalkiečiai, 3b) Lithuanian *kanklės* from northwestern Žemaičiai, 3c) Lettish *kokle* from Kurzeme, 3d) West Estonian *kannel*, 3e) Izhorian *kannel*, 3f) Karelian *kanuele*, 3g) southeastern Finnish *kanuele* (after Apanavičius 1992: ill. 8).

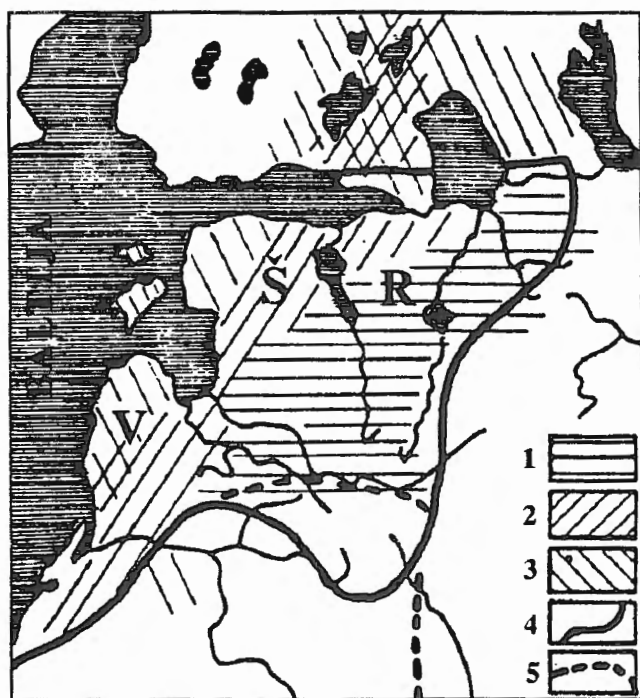


Fig. 7: The spread of the *kanklės* 1) type 1, 2) type 2, 3) type 3, 4) the limit of the Narva culture (R) Eastern, Š) Northern, V) Western variant), 5) the limit of the Nemunas culture (after Apanavičius et al. 1990).

Kluge (1967:316-317) and E. Hellquist (1922:242), while the common Baltic and Slav word *ragas/rog* 'a horn' has no other equivalent in the Indo-European languages, except the resemblance to the Sanskrit *rôg* 'a horn, a jut'. In this connection, E. Fraenkel gives the Prussian words *ragis*, *ragingis* 'a deer' (1962:68), though other linguists do not mention this word. In the Baltic and Baltic Finnish lands of the "*kanklės*" culture, these instruments are given the names of Baltic origin — *taure*, which are related to Latvian *taure* 'trumpet', Lithuanian *tauras*, Latvian *taurus* 'bull', Prussian *tauris* 'aurochs'. These names also coincide with Slavic, Italic, Irish, Avestan and even Proto-Semitic ancient terms of 'bull, aurochs, calf'.

In the eastern territory of the wind-instrument culture, there also exist more ancient instruments having common Baltic and Slavic names: *dūdelė/dudka* 'a whistle', *daudytė* 'a trumpet', *skudučiai* 'multi-pipes whistles'. The names of these instruments, as well as the Finnish names *pilli*, *piolian*, *pellian* 'a whistle' correspond not only with the sound imitating terms of the Indo-European languages, but also with the same words of the languages of the other linguistic systems. It can be shown that imitating bird sounds is a concept going back as far as the pre-Indo-European period.

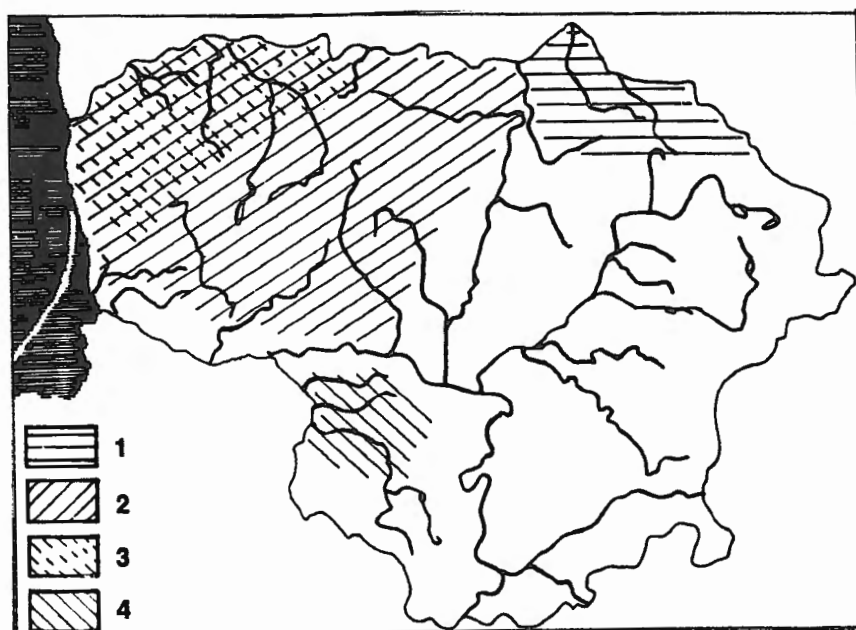


Fig. 8: The spread of the *kanklės* in Lithuania: 1) northeastern Aukštaičiai, 2) western Aukštaičiai and Žemaičiai, 3) northwestern Žemaičiai, 4) Suvalkiečiai (after Apanavičius et al. 1990).

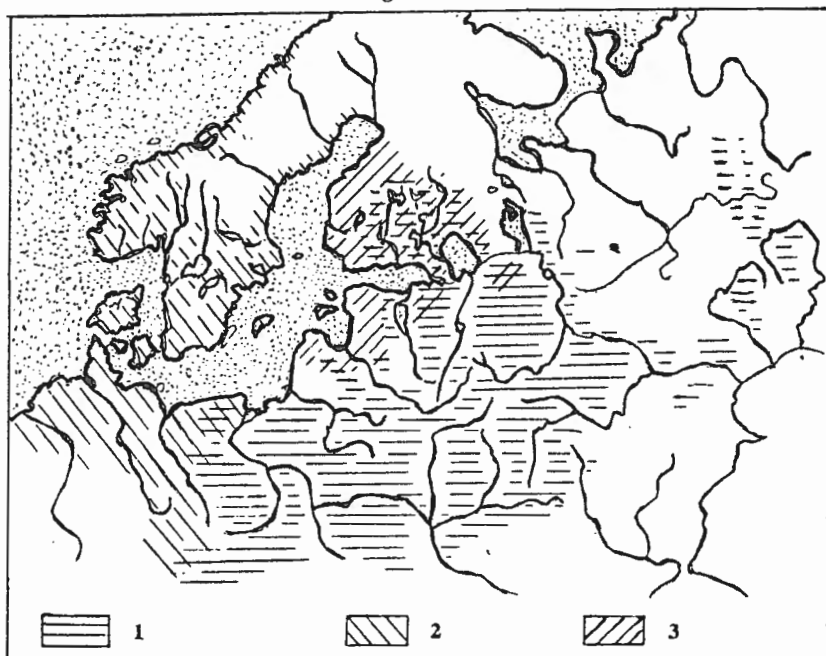


Fig. 9: The names of the trumpets of Northern Europe:

1) ragas, 2) horn, 3) taure (after Apanavičius 1992: ill. 5).

The common names of the Baltic and Baltic Finnish *kanklės/kantele* most likely, go back to (pre)Finnish times. It may be the relics of ancient (pre)Balts. Their Finnish origin, in spite of rather strenuous efforts, cannot be proved conclusively.

The same negative view is noted by the most outstanding Finnish linguists — J. J. Mikkola (1925:89-91), E. Nieminen (1963:31-40) and Y. H. Toivonen (1974:156). According to research into the customs and use of the ethnic musical instruments, the wind-instrument culture has more links with the traditions of ancient hunting and cattle-breeding, while the *kanklės*-culture, apart from cattle-breeding, is more related to agricultural traditions.

In the author's opinion, the eastern part of the "wind" instrument culture was an area inhabited by the ancient Eastern Balts, while the "*kanklės*" culture was inhabited by the ancient Western Balts. Their ethnocultural and ethnic base was so firm that it remained in the way of life, customs and ethnomusic of the ethnic groups and nations which formed later in these areas. Using such an instrumental stock,

the northern Russians, Belarussians, northern Ukrainians, possibly, northeastern Poles and the Volga Finns may be considered the descendants of the Eastern Balts. These Eastern Baltic sources can be traced in the origin of the Permian Finns (Fig. 10). As to the ethnoinstrumental data today, the southern and eastern Lithuanians may also be considered the Eastern Balts (Fig. 11). They are true “blowers” and have more common traits with the entire enormous eastern region rather than with the “*kanklės*” culture that occurred in western and northern Lithuania.

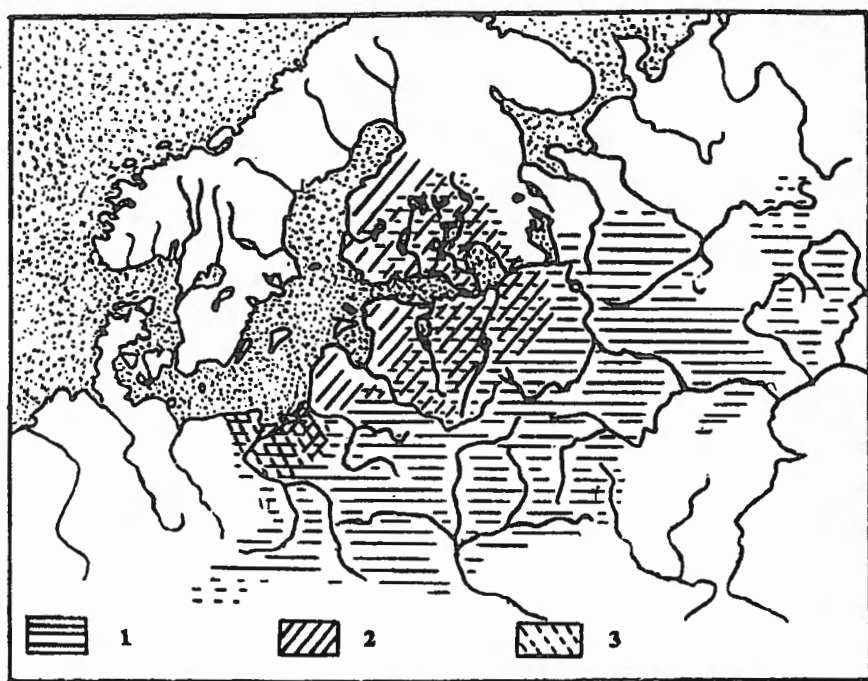


Fig. 10: The lands of the ancient Balts according to ethnoinstrumentological data: 1) eastern, 2) western, 3) southwestern?
(after Apanavičius 1992: ill. 10).

Thus, in as far as they use instruments of Baltic origin, all the Baltic Finns and northwestern Russians may be descendants of the old

Ancient Balts: Ethnoinstrumentological Data

western group. According to ethnoinstrumental data, Latvian and western, as well northern, Lithuanians, the “*kanklės* players,” who from the standpoint of linguistics are eastern Balts, belong to this group (Fig. 11).

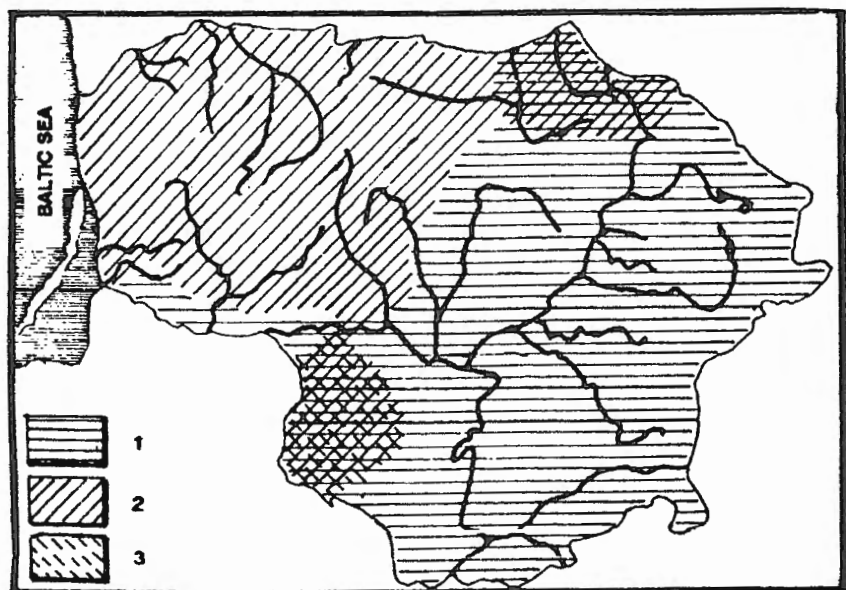


Fig. 11: Baltic lands in Lithuania according to the ethnoinstrumentological data: 1) eastern, 2) western, 3) southwestern?

(after Apanavičius 1992: ill. 11).

According to the hypothesis advanced here, most of the Balts, Finno-Ugrian and maybe even East Slavic musical instruments probably have one and the same, most likely, (pre)Baltic origin. The area of the ancient (pre)Balts might have been much wider: it might also have included the lands of the Volga Finns in the East and the lands of the Baltic and maybe Perm Finns in the North. Finno-Ugrians (fourth millennium BC) and Slavs (seventh to ninth centuries AD), having come to the lands of the (pre)Balts with the musical instruments they brought, had to adopt and later to consider as their own most of the musical instruments of (pre)Balts.

These new statements may be debatable. Perhaps the most controversial point is the spread of the (pre)Baltic ethnoinstrumental

area far to the East and the North beyond the boundaries of the area of the Baltic hydronyms, as well as the apportionment of Western and Eastern Balts. However, ethnoinstrumentological data force us to pay attention to this.

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Physical Anthropology

Craniological Substratum of the Balts in Prussia and Lithuania

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The first people seem to have appeared in the southeastern Baltic area (Prussia and Lithuania) not earlier than the eleventh to tenth millennia BC, after the melting of the last glacier. The Mesolithic period of the region is represented by the male skull from Kirsna, investigated by Žilinskas (1931) and remeasured later on by Mark (1956), and a female skull without facial bones from Spiginas (Balčiūnienė, Česnys and Jankauskas 1992). According to coefficients of sexual dimorphism, the measurements of the last skull were calculated into the male ones (Table 1). The Kirsna man is a hypermorphic, hyperdolichocranic narrow-faced Caucasoid with a sharp vertical and horizontal profile of the face. The Spiginas cranium is mesomorphic brachycranic and broad-faced.

Unfortunately, comparative Mesolithic materials are too few to elucidate in essence the origin of the first inhabitants; nevertheless, some conclusions can be made. The Kirsna skull has analogies in the dolichocranic type of the Latvian Mesolithic (Table 1), the Danish Maglemose and the Ertebølle cultures. Denisova (1975) connected the peopling of the Baltic area with the West European Magdalenians. According to Girininkas (1994), Clark speaks about a united Nordic culture among the European Mesolithic people, and many archaeologists (e.g. Rimantienė 1984; Girininkas 1994 and others) point out the similarities between the Baltic Mesolithic and the Danish Maglemose cultures. To all appearances, the first inhabitants of Prussia and Lithuania came from the West along the southern coast of the Baltic Sea (Fig. 1).

The origin of the Spiginas anthropological type is quite unclear. Mesocranic forms were detected in Latvian Mesolithic materials (Table 1), and Denisova (1975) looks for its sources in the East European brachyranes that had ancient contacts with Ural populations and had a somewhat flattened facial profile. It is difficult to deny her opinion, for the mesocranic type from Zvejnieki really was notable for platignathy. However, mesobrachycrany is known elsewhere in the

Trait number after R. Martin	The trait	LITHUANIAN MESOLITHIC, VI-V millennia BC		LATVIAN MESOLITHIC V-IV millennia BC		MAGLEMOSE CULTURE, VII-V mill. BC (Petersen 1990)	ERTEBØLLE CULTURE, IV mill. BC (Petersen 1990)
		Kirsna (Mark 1956)	Spiginas (Balčiūnienė et al. 1992)	(Denisova 1975)			
				Dolichocranic	Mesocranic		
				Type	Type		
1	Cranial length	193.0(1)	178.3(1)	192.0(6)	183.2(6)	190.0(2)	190.1(12)
8	Cranial breadth	133.0(1)	146.2(1)	133.8(5)	138.1(8)	141.0(2)	147.4(9)
8:01	Cranial index	68.9(1)	82.0(1)	69.9(5)	74.7(6)	74.2(2)	77.5(9)
17	Cranial height	142.0(1)	-	141.2(5)	139.4(7)	155.0(1)	145.0(6)
45	Bizygomatic breadth	129.0(1)	136.1(1)?	137.6(5)	136.3(6)	138.1(1)	144.6(10)
48	Upper facial height	75.0(1)	-	74.8(4)	67.5(6)	70.9(1)	71.4(9)
48:45	Upper facial index	58.1(1)	-	54.0(4)	49.4(5)	51.4(1)	49.4(9)
52:51	Orbital index	79.1(1)	-	73.4(5)	74.9(6)	-	-
54:55	Nasal index	48.1(1)	-	45.9(4)	49.4(6)	42.4(1)	46.4(8)
75(1)	Nasal angle	29.0(1)	-	36.3(4)	28.0(5)	-	-
SS:SC	Simotic index	-	-	51.8(4)	51.8(5)	-	-
77	Nasomalar angle	141.0(1)	-	135.2(3)	142.5(5)	-	-
<zm'	Zygomaxillair angle	124.5(1)	-	124.6(4)	126.2(5)	-	-

Table 1: Craniometric data on Mesolithic skulls from the Baltic region and Scandinavia (male crania).

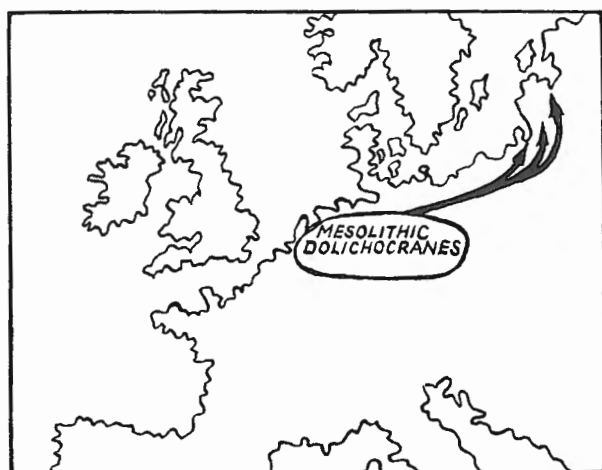


Fig. 1: A possible way of peopling the Baltic area in the Mesolithic.

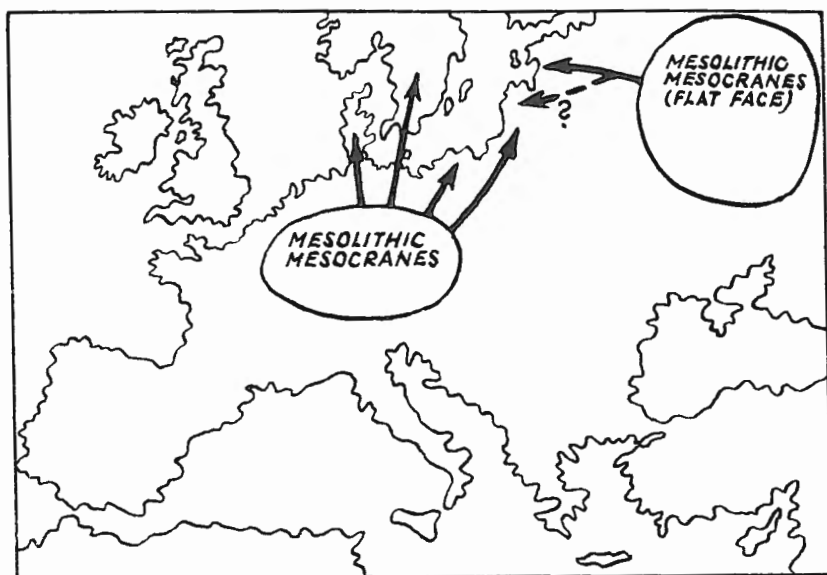


Fig. 2: Two kernels of mesobrachycrany in the Mesolithic.

European Stone Age, for example, in the British Isles (Bunak 1951) and Scandinavia (Fürst 1925). For instance, the bright-length index of a Mesolithic Ertebølle culture skull from Fannerup (Bennike and Alexandersen 1998) was 78.4, and the mean of the pooled sample of the same culture was 77.5 (Table 1).

Bunak (1951) determined the kernel of brachyranes in the middle of Europe. Its sources started as far back as the Palaeolithic (Téviec, Kasselmoose, Tangermünde, Spandau and other crania) due to the development of archeomorphic Europoids (the Cro-Magnon type). The Central European Caucasoids (proto-Dinarids and proto-Alpines) preserved for a long time a combination of brachycrany and a more or less wide face. Unfortunately, nothing is known about their facial profile, but presumably, it might have been sharp. We tend to suppose that the Spiginas-type men could appear on the southeastern Baltic coast from this middle European kernel (Fig. 2).

No doubt, hybridization of dolichocranic and brachyranic forms took place until the early Neolithic, when the Narva and Nemunas cultures emerged in the area, the last making contact in the West (in Prussia) with the late Globular Amphora culture (Česnys 1991). Unfortunately, the Nemunas and Narva culture findings are too few (Table 2) to analyze them separately. Besides, they seem to be of the same mesobrachyranic type. That is why it is possible to join the materials into a pooled sample; moreover, the territories of these almost synchronous cultures communicated, and their boundary was not absolute (Rimantienė 1984). The Nemunas and Narva people were notable for mesomorphy and mesocrany, euryenic face of moderate width and low upper height, low orbits and nose. It is necessary to point out some flatness of the upper part of the face, but the materials are too fragmentary to judge more categorically about the platiopy of the population (Fig. 3).

The Globular Amphora sample represents the Prussian territory (Rimantienė and Česnys 1990). Morphologically, it repeats the features of the Narva and Nemunas series. When the means of the two last culture samples are expressed in percents of dimensions in early Indo-European (the Boat-Axe) series (Fig. 4), their absolute identity comes to light according to the size and shape of the vault and the bizygomatic width. Some differences also appear in the form of facial details and height of the face. The Globular Amphora people can be treated as a high-faced version of the complex, which was

characteristic of the inhabitants of the Nemunas and Narva culture area.



Fig. 3: Sources of mesocrany in the Neolithic.

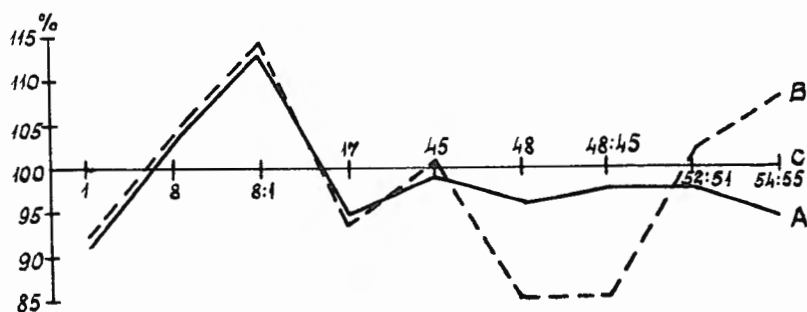


Fig. 4: The skulls of Globular Amphora (A), Nemunas and Narva (B) people expressed in percentages of those in the Boat-Axe people (C).

	C U L T U R E			
Trait number after R. Martin	Nemunas, Lithuania and Prussia (Turlojiškė, Braynicken)	Narva, Lithuania (Kretuonas)	Nemunas and Narva totally	Globular Amphora, Prussia (Briesen, Wiesenfeld, Lötzen, Janiszewek)
1	179.0(2)	186.0(3)	183.2(5)	183.0(5)
8	149.0(2)	141.0(3)	144.2(5)	142.6(5)
8:01	83.3(2)	75.8(3)	78.8(5)	78.1(5)
17	133.0(2)	130.5(2)	131.7(4)	132.6(5)
45	133.0(2)	143.0(1)	163.3(3)	134.5(4)
48	63.0(2)	-	63.0(2)	74.0(5)
48:45	47.3(2)	-	47.3(2)	54.7(4)
52:51	76.3(2)	-	76.3(2)	72.4(5)
54:55	52.6(2)	-	52.6(2)	45.5(4)
75(1)	21.0(1)	-	21.0(1)	-
DS:DC	-	-	-	-
SS:SC	-	-	-	-
77	144.9(1)	142.9(1)	143.9(2)	-
<z m'	132.7(1)	-	-	-

Table 2: Pre-Indo-European Neolithic anthropological materials from Lithuania and Prussia.

The origin of pre-Indo-European mesocranic and mesomorphic type with a wide and low face ("the southeast Baltic mesocranes") was discussed in another paper (Česnys 1991) on the basis of multivariate analysis of seventy craniological samples from Central and East Europe. Here it is essential to point out their genetic relations with Mesolithic mesocranes of the region that might have been of Central European descent. Moreover, the migration of mesobrachyranic tribes might have continued during entire Neolithic period. In spite of the fact that some Nemunas and Narva skulls had a flattened profile (materials are fragmentary, and it might be individual characters of the crania), there is no direct evidence of repercussions of people from the East European focus of brachyranes. The Central European orientation of the Prussian Globular Amphora sample, the typical representative of the southeast Baltic mesocranes, is quite evident, for they form a single cluster with the Globular Amphora population from Poland, the Bell Beaker culture from Moravia and the Megalith culture

people from Germany in the clusterization dendrogram of Penrose's coefficients (Fig. 5). The representatives of the Comb- and Pit-Marked Pottery culture from Estonia and mesocranic forms of the Latvian Narva culture have nothing in common with the southeast Baltic mesocranes; they stand quite on the opposite edge of the dendrogram.

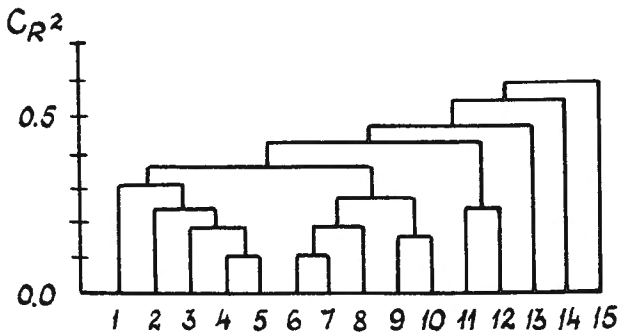


Fig. 5: Analogies to the mesocranic forms of the Baltic area.

1) Globular Amphora, Prussia; 2) Globular Amphora, Poland; 3) Bell Beaker, Moravia; 4) Middle Neolithic, Denmark; 5) Megalithic, Germany; 6) Bell Beaker, Germany; 7) Wieselberger, Austria; 8) Globular Amphora, Romania; 9) Catacomb, Ukraine; 10) Late Neolithic, Denmark; 11) Early Bronze Age, south Germany; 12) Bell Beaker, Bohemia; 13) Mesocranic forms of the Narva culture, Zvejnieki, Latvia; 14) Comb- and Pit-Marked culture, European USSR; 15) Globular Amphora, Ukraine.

Summarizing, it is possible to say, that the first massive dolichocranic Caucasoids came to the territory of Prussia and Lithuania from the West, mesocranic component emerged from the Central Europe, the result of their hybridization and repercussions of mesobrahycranic people from the Central European kernel of brachyranes were deciding factors in the formation of pre-Indo-European anthropological background in the area.

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The Odontological Characteristics of Lithuanian Balts and their Roots

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The first people (probably hunters) came to the contemporary territory of Lithuania around the eighteenth millennium BC, although the first skeletal material dates only from the Mesolithic. The Neolithic people of Lithuania belonged to the local Narva and Nemunas cultures. Subsequently, the Corded Ware culture, whose people were Indo-Europeans, changed the local cultures at the end of the third millennium BC. As a result of the mixture between local Neolithic and the Corded Ware cultures, the Pamarių (Rzucewo) culture emerged.

The people of the Pamarių culture have been considered the first Balts in Lithuanian territory (Rimantienė 1977), and the nucleus of this culture was located on the southeast coast of the Baltic Sea. However, the influence of the Pamarių culture extended to the Vistula in the west, the Pripyat river in the south, the Dnieper in the east and to the right bank of the Daugava in the north (Rimantienė 1984).

The purpose of this article is to reveal the odontological type of these first inhabitants of Lithuania and to try to explain the formation of this type.

Materials and methods

We have investigated three skulls from Mesolithic graves located at Kirsna and Spiginas, which date from the eighth to seventh millennium BC. A further twenty-one skulls from Neolithic graves, dating from the third to second millennium BC, found in Kretuonas, Šventoji, Turlojiškė, Plinkaigalis and Duonkalis were also studied. Additionally, eight fragmentary skulls from the Bronze Age (ca. 1500-1400 BC) graves at Kretuonas Ic have been included in our study. The odontological survey consisted of odontoscopy and examination of wax imprints of molars under laboratory conditions. The methods of Zubov (1968 and 1973) were used for evaluation of odontological traits. The spacing (diastema) I^1-I^1 , crowding I^2 , the I^2 -reduction level, the shape of the lingual surfaces of the upper incisors (I^1 and I^2),

Odontological Characteristics of the Balts

Carabelli's cusp, the form of the upper molars (M^1 and M^2) as connected with the hypocone reduction, the shape of the lower molars (M_1 and M_2), the distal trigonid crest (hereafter d.t.c.), the deflecting wrinkle (d.w.) of the metaconid, the inner medial supplementary tubercle (*tuberculum accessorium mediale internum* or t.a.m.i.) on the M_1 , the course of the second metaconid furrow (2 med) on the M_1 and the shape of the first paracone furrow (1 pa) on the M^1 as well as the form of the first and second entoconid furrows (1 and 2 end) on M_2 were taken into account.

Results and discussion

The odontological material from the Mesolithic graves is scanty. We were able to investigate the tooth dimensions of only one individual (from Spiginas), and these dimensions are given in the following chart

	VL _{cor}	MD _{cor}	M _{cor}	I _{cor}
C	8.9	7.3	8.1	121.91
M^1	12.0	11.6	11.8	103.44
M_1	11.3	11.1	11.2	101.80
M_2	11.0	11.8	11.4	93.22
M_3	11.0	11.0	11.0	100.00

According to our data, mesiodital diameters and the crown module of the lower molars correspond to the formula $M_2 > M_1 > M_3$. The people from Mesolithic graves were macrodonts judging from M_{cor} M^1 (11.8).

The odontoscopical data presented in Table 1 are rather interesting. We determined only the initial stage (first degree) of the I^1 and I^2 shovel shapedness, the five-cusped M_1 with the form +5 and the four-cusped M_2 with form +4. We have not found deflecting metaconid wrinkles, distal trigonid crests, nor inner medial supplementary tubercles on the M_1 . According to these data, the Mesolithic individuals were Caucasoids and belonged to the massive Central European odontological type. This type is the most ancient version of the Central European odontological type in Lithuania.

The producers of the local Neolithic cultures (Narva and Nemunas) belonged to the same massive Central European type. The Corded Ware (Plinkaigalis) people were Indo-Europeans, but

No.	Trait	Mesolithic Age		Neolithic Age Duonkalnis		Neolithic Age Total		Bronze Age	
		N	n	N	n	N	n	N	n
1	Diastema I ² -I ²	3	0	2	0	3	0	-	-
2	Crowding I ²	3	0	3	0	8	0	-	-
3	I ² reduction (degree 1)	1	0	3	0	3	0	-	-
4	I ² reduction (2+3)	1	0	3	0	3	0	-	-
5	Shovel-shaped I ¹ (degree 1)	1	1	4	1	6	1	-	-
6	Shovel-shaped I ¹ (2+3)	1	0	4	0	6	0	-	-
7	Shovel-shaped I ² (degree 1)	1	1	2	2	3	2	-	-
8	Shovel-shaped I ² (2 + 3)	1	0	2	0	3	0	-	-
9	M ¹ hypocone reduction (form 4)	1	1	3	3	9	9	1	1
10	M ² hypocone reduction (form 4)	1	1	-	-	7	1	-	-
11	M ² hypocone reduction (form 4-)	1	0	1	1	7	6	-	-
12	M ¹ Carabelli's cusp (degree 2-5)	-	-	2	0	5	2	1	1
13	M ₁ +5	1	1	1	1	5	4	3	0
14	M ₁ Σ5	1	1	2	2	5	5	3	3
15	M ₂ Σ4	1	1	2	2	4	4	1	1
16	Distal trigonid crest	-	-	2	0	5	0	2	0
17	Deflecting metaconid wrinkle	1	0	1	0	4	0	2	0
18	T.a.m.i.	1	0	3	0	10	0	3	0
19	M ₁ 2med (II)	-	-	1	1	3	1	-	-
20	M ₁ 2med (fc)	-	-	1	0	3	2	-	-
21	M ¹ pa (form 1)	-	-	3	1	3	1	-	-
22	M ¹ pa (form 2)	0	0	3	2	3	2	-	-
23	M ² pa (form 3)	-	-	3	0	3	0	-	-
24	M ² enamel prolongments (degree 4)	-	-	2	0	8	1	-	-
25	M ² enamel prolongments (degree 5)	-	-	2	1	8	1	-	-
26	M ² enamel prolongments absent	-	-	2	1	8	6	-	-

Table 1: Odontology of the Stone Age and the Bronze Age in Lithuania

Odontological Characteristics of the Balts

odontological diagnosis of the skulls from the Plinkaigalis culture was impossible, because the people were between fifty and fifty-five years old and their teeth were considerably abraded (3° to 4°).

The Balts emerged as a result of a mixture of local Neolithic and the Corded Ware cultures. As a result, we can judge what culture was prevailing in the formation of the Balts from the odontological type of the Pamarių culture people.

The first Baltic tribes from Duonkalnis (Pamarių culture) were noted for the macrodontic M^1 (M_{cor} 10.8) and the high index M^2 (I_{cor} 135.6) (Table 2). The mesiodistal diameters (MD_{cor}) of the upper molars correspond to the formula $M^1 > M^2 > M^3$ and that of the lower molars to the formula $M_1 > M_3 > M_2$. The buccolingual diameters (VL_{cor}) of the upper molars correspond to the formula $M^2 > M^1 > M^3$, which is also characteristic for modern Lithuanians.

Teeth	N	Teeth Dimensions			
		VLcor	MDcor	Mcor	Icor
13	3	8.3	7.3	7.8	112.90
14	3	8.7	6.3	7.5	137.70
15	3	9.6	6.2	7.9	154.50
16	3	11.6	9.9	10.8	118.20
17	2	12.2	9.0	10.6	135.60
18	1	10.2	8.2	9.2	124.39
43	3	7.1	6.3	6.7	112.60
44	3	7.1	6.3	6.7	113.80
45	3	7.8	6.3	7.1	123.90
46	3	10.4	10.7	10.5	97.60
47	3	9.9	10.0	10.0	99.70
48	3	9.6	10.2	9.9	93.50

Table 2: Teeth Dimensions of the First Baltic Tribes from Duonkalnis

The odontoscopical data show an absence of the distal trigonid crest, the deflecting metaconid wrinkle, the *tuberculum assessorium mediale internum*, the shovel-shaped I^1 , the six-cusped and four-cusped M_1 , I^2 reduction, the diastema and crowding, but the typical five-cusped M_1 in the +5-form, the four-cusped M_2 in the X4-form and *tuberculum Carabelli* are all present.

In these features, the people from Duonkalnis odontologically were similar to the people of earlier local Neolithic cultures. It means the Indo-European immigrants did not change the odontological type of substrate. Probably they expanded into a closed odontological medium. Apparently, the Indo-Europeans that came to the territory of Lithuania across Europe, obtained traits typical of the Central European odontological type. Gimbutienė has written about this feature (1985).

We can conclude that the people from Duonkalnis reflect the whole complex of the odontological types of the Stone Age population in Lithuania (Tables 1 and 3). Therefore, the roots of the Balts can be traced in the morphological stock of the local Mesolithic and Neolithic people who represented the feature complex characteristic of the ancient Central European odontological type.

Teeth	N	Teeth Dimensions			
		VLcor	MDcor	Mcor	Icor
13	6	8.18	7.15	7.67	114.73
14	7	8.82	6.30	7.56	140.76
15	7	9.45	6.10	7.78	155.99
16	9	11.70	10.03	10.86	116.82
17	6	11.90	9.11	10.50	130.79
18	2	10.25	8.40	9.33	122.08
43	5	7.28	6.20	6.74	117.84
44	6	7.35	6.31	6.83	117.05
45	6	8.18	6.43	7.30	127.23
46	9	10.71	11.13	10.92	96.36
47	7	10.17	10.40	10.28	97.89
48	4	9.70	10.20	9.93	94.85

Table 3: Teeth Dimensions of the Neolithic Population in Lithuania

The odontological material representing the Bronze Age is from the eastern part of Lithuania; therefore, we can only discuss the Bronze Age of this area. Odontologically, this region and especially this period are rather interesting because we can see the continuation of the same, Central European type, which is typical for Lithuania. This fact is testified (Table 1) by such characteristic traits as the Carabelli cusp (which, by the way, exhibits degree 5), five-cusped M_1 , four-cusped

Odontological Characteristics of the Balts

Number of the Traits in Table 1	Latvia Stone Age (Gravere 1977)	Bronze Age (Gravere 1977)	Fatyanovo People (Gravere 1977)	Ukraine Neolithic (Haldeyeva 1968)	Ukraine Mesolithic (Haldeyeva 1968)
1	3.3	10.0	2.0	50.0	35.5
2	3.3	10.0	2.0	0.0	0.0
3	14.5	30.6	3.5	-	-
4	0.0	4.1	0.0	-	-
5	7.9	20.0	9.7	20.0	67.5
6	8.0	7.3	0.0	0.0	32.5
7	16.7	18.8	16.2	-	-
8	11.6	18.9	16.2	38.8	44.4
9	-	-	-	-	-
10	35.3	40.9	27.5	10.9	8.0
11	50.6	36.4	50.0	85.5	92.0
12	30.3	34.6	18.6	13.2	0.0
13	23.8	24.2	8.8	6.7	0.0
14	86.9	79.4	88.3	-	-
15	66.0	87.0	86.1	-	-
16	0.0	13.8	0.0	0.0	0.0
17	11.1	15.4	5.8	0.0	0.0
18	16.7	6.9	8.8	13.0	16.7
19	-	22.0	-	-	-
20	-	-	-	-	-
21	-	10.0	-	-	-
22	-	-	-	-	-
23	-	26.0	-	-	-
24	-	-	-	-	-
25	-	-	-	-	-
26	-	-	-	-	-

Table 4: The Comparative Odontology of the Stone Age

M₂, the absence of the distal trigonid crest, the deflecting metaconid wrinkle and the *tuberculum accessorium mediale internum*. Thus, not only can we relate the origin of the Balts to the Central European odontological type, but also assert that this type was prevailing in the territory of Lithuania in the period of the Stone Age.

It is in no small way interesting to look at the Central European odontological type parallels between Lithuania and the neighboring

regions. We have been able to compare odontological materials of the same periods of the Stone and Bronze Ages from Latvia (Table 4). The Fatyanovo people are of special interest for us because they have been considered to be one of the pre-Balt peoples (Kraňov 1972; Denisova 1975).

According to archaeological data, the tribes of the Corded Ware culture, the Fatyanovo people and the tribes from the central Dnieper area were related (Moora 1958), but Rimantienė (1977) considers these tribes to have been aspects of the same culture — the Corded Ware culture.

The people of the Stone and Bronze Ages of Latvia differed from the people of Lithuania according to the reduction traits, the shovel-shaped I^1 and the deflecting metaconid wrinkle. These traits show a great influence from the North gracile odontological type, which is absent in Lithuania.

The Fatyanovo people were very similar to the Stone Age population of Lithuania, but they were more gracile; the form +5 is not typical for them. Moreover, they have a very high percentage of t.a.m.i., and this feature is not characteristic in Lithuania. We can thus say that while the Central European odontological type is typical for the Lithuanian and Fatyanovo people, in Lithuania this type is "purer" and more massive. Some influence from the southeast component is notable in the Fatyanovo people.

The Mesolithic and Neolithic populations of Ukraine are the closest to those in Stone Age Lithuania. However, a very high frequency of the shovel-shaped forms I^1 and I^2 , as well as t.a.m.i are typical for the Mesolithic Age people of Ukraine. We can see the adaptation traits in shovel-shaped forms 2 and 3, but the high percentage of t.a.m.i. indicates the southern influence. The same massive Central European odontological type in Lithuania is also characteristic in the Neolithic Ukrainian people, and again in features such as the rarity of the Carabelli cusp and the high frequency of t.a.m.i. the Southern type influence is evident.

Thus, the main complex of the Central European odontological type traits are typical for the Stone Age population in Lithuania, the Mesolithic and Neolithic populations in Ukraine and the Fatyanovo people. The Ukrainian and Fatyanovo people belong to the same type, and they are, indeed, very closely related tribes, as has been proven (Moora 1958; Kraňov 1972; Denisova 1975).

The results of this study indicate that the people of Mesolithic

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and Neolithic times in Lithuania belonged to the pure and massive Central European odontological type and that the roots of the Balts are in the morphological base of the local Mesolithic and Neolithic peoples.

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**Pitfalls in the Search for Ethnic Origins:
a Cautionary Tale regarding the
Construction of "Anthropological Types"
in Pre-Indo-European Northeast Europe***

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Bioanthropological discussion of the pre-Indo-European populations of northeast Europe continues to be conducted nearly exclusively in terms of the differential temporal and spatial distributions of myriad "sub-races" and "anthropological types." The present paper critiques this practice on three levels. On the methodological level, diagnosis of "anthropological types" is held to be a biologically meaningless classificatory exercise unless informed adequately by explicit theoretical premises. Moreover, on the theoretical level, the diagnosis of "anthropological types" in pre-Indo-European northeast Europe is found to be invalid, for essential cultural ecological and demographic preconditions for the development of such

* This paper is for the late Priit Ligi — Estonian archaeologist, colleague and concerned human being whose fight against the recrudescence of nationalist and ethnicist archaeologies ended tragically with the sinking of the Baltic ferry in the autumn of 1994.

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types had not yet arisen. Finally, we conclude that, in light of the ever-increasing ideologization of the past in service of present-day ethnicist and nationalist conflicts, continued adoption of a typological perspective is, at the very least, unwise.

Introduction

It has become an archaeological and ethnological truism that many of the traditional categories in these fields — archaeological cultures and ethnoes, for instance in fact are frequently arbitrary social constructions (cf. Chapman 1993; Ingold 1986; Shanks and Tilley 1987). Depending as they do wholly upon the choice of criteria used to divide and classify, the categories issuing from such typological exercises bear a relationship to actual human socio-cultural, economic and demographic processes which is at best ambiguous and, at worst, illusory. It is odd, therefore, that discussion of human biological diversity in pre-Indo-European northeast Europe persists in a mode starkly different from that in cognate fields, with the many conceptual adjustments that are evident elsewhere being apparent only rarely in the bioanthropology of prehistoric Europe. This inertia is evinced nowhere more dramatically than in the continued use of a language in which “anthropological types” are proffered as a category of fundamentally significant meaning.

More specifically, northeast Europe’s human biological history during Mesolithic and Neolithic times — in other words, the history of the region’s pre-Indo-European substrate populations — is typically portrayed as a shifting mosaic composed of multiple sub-types of *Europoid* and *Mongoloid*, these being the two erstwhile “Eurasian Great Races.” The putative extent of “true Mongoloid” influence in prehistoric eastern Europe varies from author to author (cf. Bunak 1976; Denisova 1975; Gokhman 1966; Konduktorova 1973; Kruts 1984; Schwidetzky 1986), but a broad consensus accepts that sundry “Europoid” sub-types are present in unequal proportions in the many East European Mesolithic, Neolithic and even Bronze Age skeletal samples now known (Cesnys 1991a-c; and above references). Consequently, discourse regarding the biological diversity of these populations is conducted nearly exclusively in terms of the differential spatial and temporal distributions of members of the two “Great Races,” of their myriad (sub)types and of the proto-ethnic groups whose roots these various forms are presumed to represent. In this manner, pre-Indo-European northeast Europe came to be inhabited in

the eyes of scholars by "protomorphic Upper Palaeolithic" types, "proto-Mediterranean" types, "proto-Nordic" types, as well as diverse other, usually hybrid, types.

Faced with this situation, the present paper is motivated by two questions. The first, more narrowly scientific question is whether our understanding of pre-Indo-European substrate populations is advanced in any way by such typologizing of the human skeletal sample. Inasmuch as the proposed answer here is negative, a second, ethical question then arises: Given that typological constructs — e.g. (proto)ethnoses — increasingly are being ideologized and politically misused in the present day, is it possible to justify the continued application of this divisive, exclusionary and theoretically invalid methodology to the past?

However, we return to and rephrase the first query: Is it not probable that **anthropological** types, much like their archaeological and ethnological analogues, are little more than arbitrary categories which more frequently obscure rather than elucidate human population biological processes? This question will be addressed on two levels, the first of which is methodological. Early definitions of anthropological types derived from osteometric and anthropometric analyses in which much epistemological faith was placed in bivariate features such as the cephalic index and sundry indices of facial flattening and facial breadth, as well as in less exact estimates of morphological archaicism or modernism (Gould 1981; Haller 1971). These methods gave rise to ethnogenetics' recurring tropes — brusque reductions of populations to "mesomorphic, brachyranic, narrow-faced Europoids" or similar combinations of terse morphometric descriptors. For some, advances in multivariate statistical techniques add an innovative allure to this approach, particularly when they appear to produce results roughly concordant with those of traditional typological classifications (cf. Benevolenskaya 1990; Schwidetzky and Rösing 1989). Rather than vindicating the typological approach, however, this concordance will be seen here to follow mechanically from the structural premises common to most such classificatory analyses.

This paper's second critique of "anthropological types" focuses on the fatally undertheorized expectation of biological difference which informs this approach to the skeletal data. Working from models in human cultural ecology and population biology, our aim is to appreciate the social and biological processes by which human groups,

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despite living in proximity, may come to develop and then to maintain biological distinctiveness from one another. Given these boundary conditions for the emergence and maintenance of distinct "anthropological types," as well as the improbability that populations in pre-Indo-European northeast Europe satisfied these conditions, any discussion of anthropological or (proto)ethnic "types" appears to be singularly unwarranted.

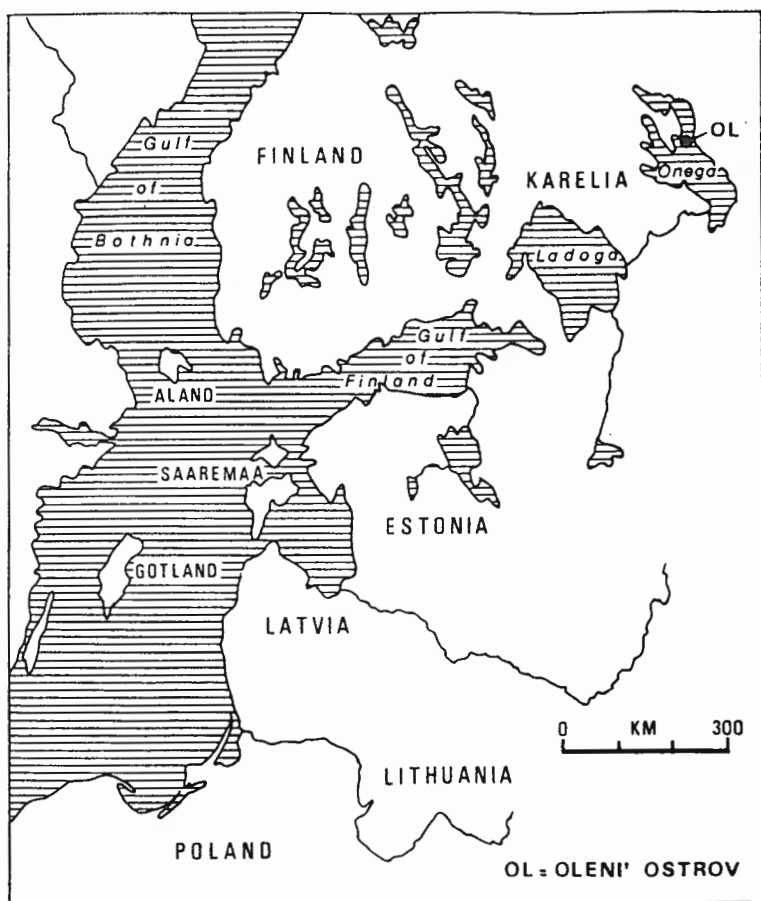


Fig. 1: Location of Oleni' ostrov, indicated by (OL), within the eastern Baltic region.



Fig. 2: Excavation grid of the cemetery at Oleni' ostrov.

Finding anthropological types as self-fulfilling prophecy

Constraints of space do not allow documenting all of the methodological pitfalls to which a typological approach is prone. Still, a straightforward example may serve to demonstrate that the diagnosis of distinct anthropological types within a single cemetery — a standard practice in the northeast European context — is far more problematic than typically realized. The exemplar here is the Mesolithic cemetery from Oleni' ostrov in Karelia (Fig. 1).

The cemetery was excavated in the latter part of the 1930s and contained over 170 burials (Gurina 1956). Following an osteological analysis of the site's better preserved individuals (Yakimov 1960), bioanthropologists working on prehistoric northeast European materials have commented frequently on Oleni' ostrov's skeletal sample, noting unanimously that it seems exceedingly variable (e.g., Benevolenskaya 1990; Denisova 1973, 1975; Graveri 1987). All authors also concur that the sample's major typological component is "Europoid," with some disagreement as to the number and composition of the sub-types which are present. Consensus holds as well that some Oleni' ostrov individuals exhibit "Mongoloid affinities." The meaning of this component is disputed, for some invoke admixture with immigrant trans-Uralic populations as the cause of "Mongoloid features," while others see at the site the vestiges of a "hyper-variable, racially undifferentiated population, morphologically midway between the classic Europoid and Mongoloid types" (see Česnys 1991c).

Unquestioned throughout these debates are the premises that the Oleni' ostrov skeletal sample is exceptionally variable and the implication that this hyper-variability requires subdivision of the sample into its component anthropological types. However, comparative cranial data from Oleni' ostrov and other Mesolithic samples from Ofnet, Moita do Sebastião, Téviec and the Danish Ertebølle (Fig. 3) (Meiklejohn 1995; Newell et al. 1979) provide a useful sample through which to assess this claim.

The Oleni' ostrov data were gathered by Ken Jacobs in 1985. The remaining data were collected by Christopher Meiklejohn during several collaborative projects over the past fifteen years. These cranial data were compared in order to evaluate the extent of each site sample's internal variability. More precisely, we evaluate whether it can be maintained that the Oleni' ostrov sample truly is an exceedingly variable one in comparison to the other roughly contemporaneous samples. The craniometric variables used are from the standard battery

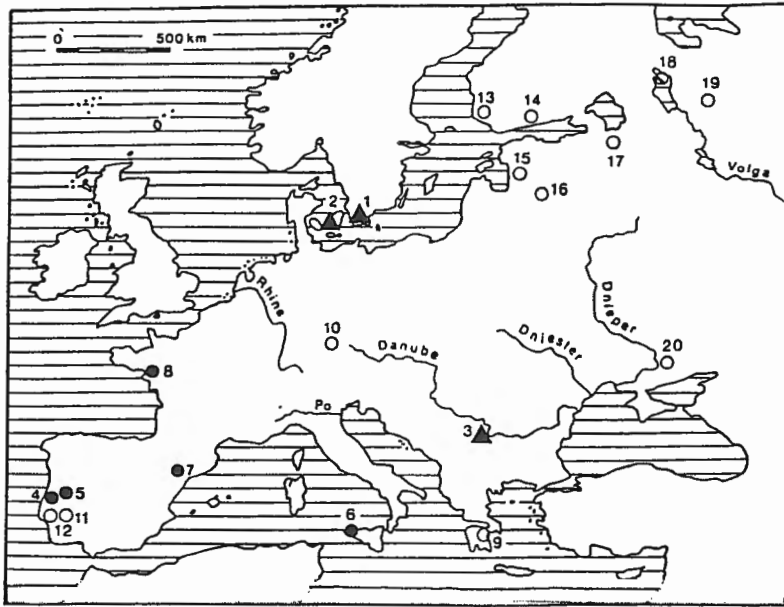


Fig. 3: Locations of the Mesolithic used in the cranial comparison here:
 2) Danish Ertebølle, 10) Ofnet, 8) Teviec, 4,5) Muge.

of measurements which currently are employed in studies of prehistoric and recent population affinities (see Howells 1989). While it is impossible to summarize all of the results here, a recurring pattern in the results warrants a brief discussion. Contrary to the received view, the crania from Oleni' ostrov do not consistently show a pattern of higher variability than do those from the other sites (Fig. 4).

Indeed, when variance is tested by the Coefficient of Variation, thereby correcting for absolute size differences among the crania, Oleni' ostrov falls in the middle of the variance ranges for the sites for the three illustrated dimensions (cranial length, cranial height and cranial base breadth) and for the vast majority of other possible dimensions not shown here. In fact, the values for the Danish sample are particularly significant for those who would privilege the use of anthropological types as a means to diagnose the diverse ethnogenetic origins of a skeletal sample. The Danish sample is consistently and without exception the most variable in all comparisons. Yet chronological, archaeological and other data (Meiklejohn et al. 1995)

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suggest that this sample also approximates more closely than do any of the others a single, closed and panmictic breeding group. Thus there is the **least** probability of mixing of biologically different "types" in the instance of the sample which shows the **greatest** osteometric variability.

The significance of this to the standard interpretations of Oleni' ostrov are obvious: if Oleni' ostrov is not appreciably more variable than the other sites, why are multiple anthropological types routinely claimed to be present here, but not elsewhere? Additionally, how may we explain the differences at Oleni' ostrov which, according to practitioners of the typological method, bespeak the presence of myriad "anthropological types" at the site? The key to the first question lies in the distinctive traditions and emphases of the schools of bioanthropological thought represented by the many students of this skeletal material (Jacobs 1995), although describing the complex interplay of tradition, method and atheoretical praxis in evidence here exceeds the scope of this paper. However, the second question — Is there in fact some meaning to the multiple anthropological types commonly "found" within single sites such as Oleni' ostrov? — is more straightforward.

The short answer to this question is: Those statistical techniques designed to divide a single, larger sample into distinct sub-groups **always** will produce such entities whenever their number is small and the number of analyzed variables is considerably larger. This is a fundamental statistical precept and it is true of all Factor Analyses and Canonical Discriminant Analyses, multivariate methods which now are commonplace. It means that an *a priori* and substantive theoretical warrant for the expectation of multiple sub-groups in a sample must exist before any attempt is made to identify such groups. **Any** discriminant analysis likely will produce reasonably well-defined sub-groups, since such analyses, by their very nature, can do nothing else. Thus if such analyses are pursued independently of a sound and pre-existing theoretical framework, the groups thereby distinguished will be meaningless in any reasonable scientific sense.

This abstruse statistical point is easily illustrated by way of an experiment, using once again the cranio-facial data from Oleni' ostrov. The cranial sample is divided into two sub-groups, with only males considered to avoid the confounding effects of sexual dimorphism. The sorting criterion is adopted from published results (O'Shea and Zvelebil 1984) of a Cluster Analysis of Oleni' ostrov's archaeological

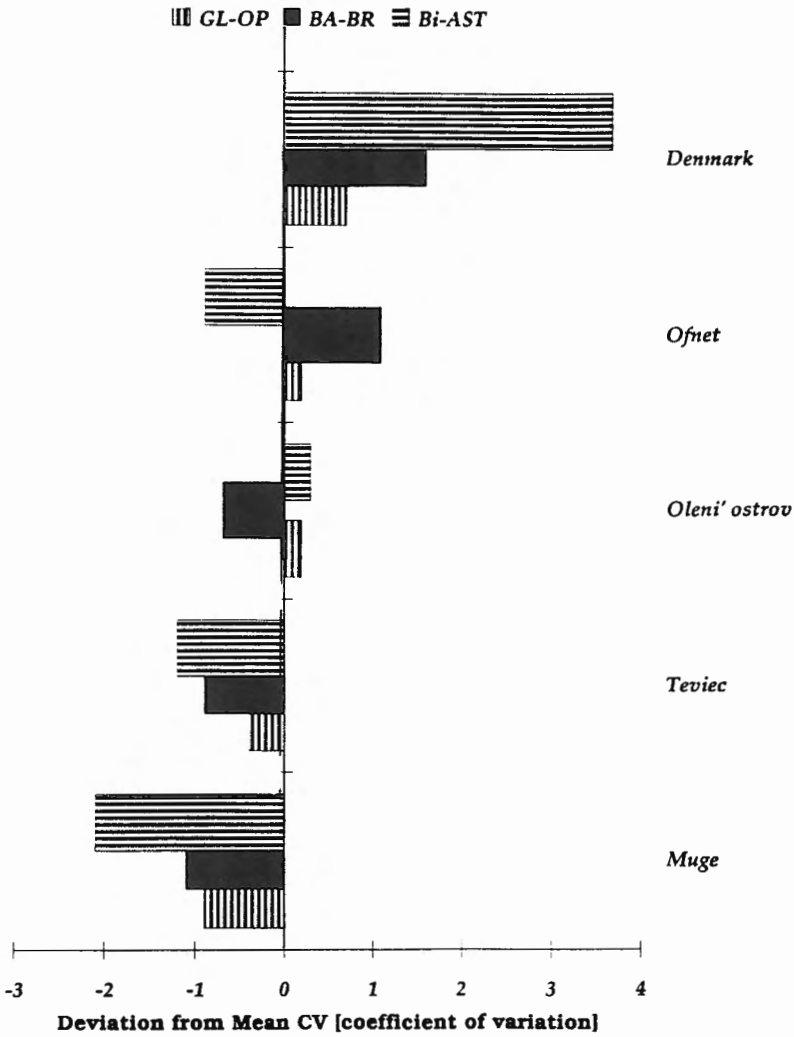


Fig. 4: Relative variations in the comparative samples for cranial length (GL-OP), cranial height (BA-BR) and cranial breadth (Bi-AST).

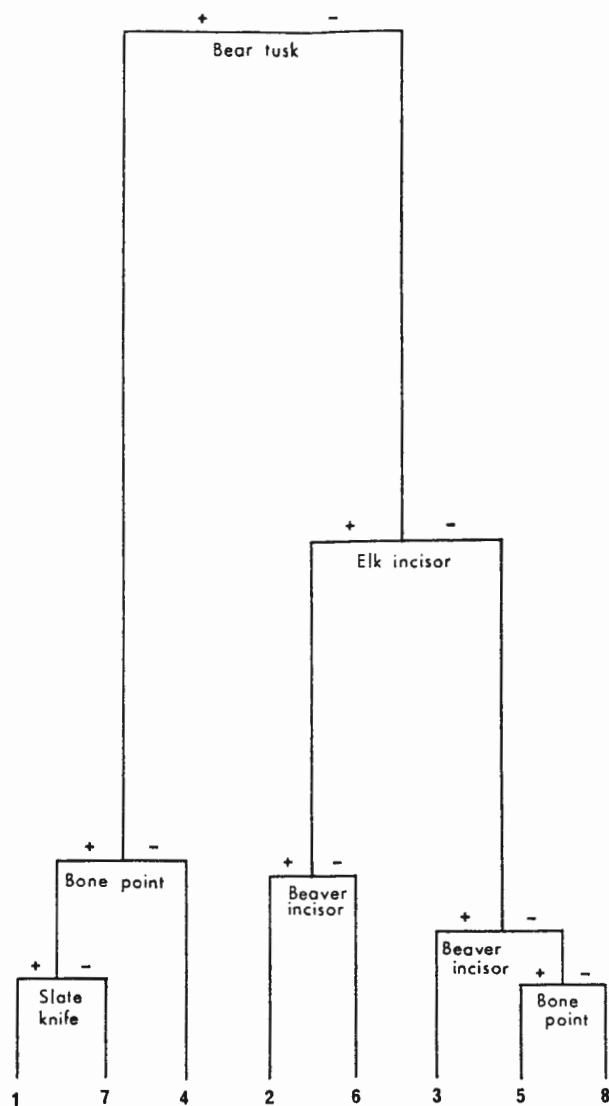


Fig. 5: Dendrogram showing the eight clusters among the funerary artifacts at Oleni' ostrov. (Adapted from O'Shea and Zvelebil 1984.)

artifacts (e.g., bone points, figurines, tooth pendants). This analysis created eight clusters (Fig. 5), each of which is statistically significantly different from the others in its presence/absence of certain diagnostic artifacts. To insure that the two sub-groups created here are as bereft of *a priori* significance as possible, the two sets comprise, respectively, the even- and the odd-numbered clusters. These sub-groups do not coincide with any of the categories to which O'Shea & Zvelebil (1984) ascribed social and/or economic meaning. Thus our arbitrary regrouping of the sample violates entirely the internal logic of the mortuary analysis, creating thereby two Oleni' ostrov sub-groups for which no meaningful biological correlates are reasonably to be expected.

The results, therefore, were enlightening and they underscore the ease with which significant distinctions may be found even in the absence of theoretical warrant. As can be seen in the table below, the two artificial sub-groups show important differences in several standard osteometric measures (cf. Fig. 6).

There are significant differences in the projection of the upper jaw (PoPr/PoBr, which is the ratio of cranial height to Porion/Prosthion distance), the projection of the upper face (PoNa/PoBr, which is the ratio of cranial height to Porion/Nasion distance) and the relative degree of parietal expansion (which is the ratio of Bi-porion cranial breadth to maximum cranial breadth [MCB]).

* = significant at $p < 0.05$	Group 1 N	Mean	Group 2 N	Mean
PoPr/PoBr*	3	1.29	10	1.23
PoNa/PoBr*	5	0.91	12	0.85
PoPr/PoNa	4	1.13	10	1.09
BiPo/MCB*	7	0.98	11	0.92
Femur Length*	9	478 mm	20	464 mm

Moreover, these cranial differences are paralleled by differences in body size as reflected here by femur length. Paradoxically, what is most intriguing about these results is not their statistical significance, for probability theory makes it virtually inevitable that a certain number of significant results will emerge from any study with a large enough sample size and variable set (Siegal and Castellan 1988). What is intriguing instead is that those variables which are found to

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discriminate the two Oleni' ostrov sub-groups also have been cited frequently (along with myriad others) as being useful in differentiating Neandertals and anatomically modern *Homo sapiens* (e.g., Holliday and Trinkaus 1991; Vandermeersch 1981). Thus, on a typological view of the matter, an *a posteriori* argument could be constructed here by virtue of which this analysis might well be seen as documenting the atavistic presence of a remnant Neandertal type at Oleni' ostrov (Fig. 6).

On an empirical level, the presence of one Oleni' ostrov "type" which is more reminiscent of Neandertals than the other is demonstrable. However, because the initial, pre-analysis sorting of the Oleni' ostrov sample was arbitrary and capricious, it was established *a priori* here that any conclusion deriving from an analysis of the sample would be bereft of biological meaning. Yet anthropological types typically are constructed, reiterated and reinforced in precisely this

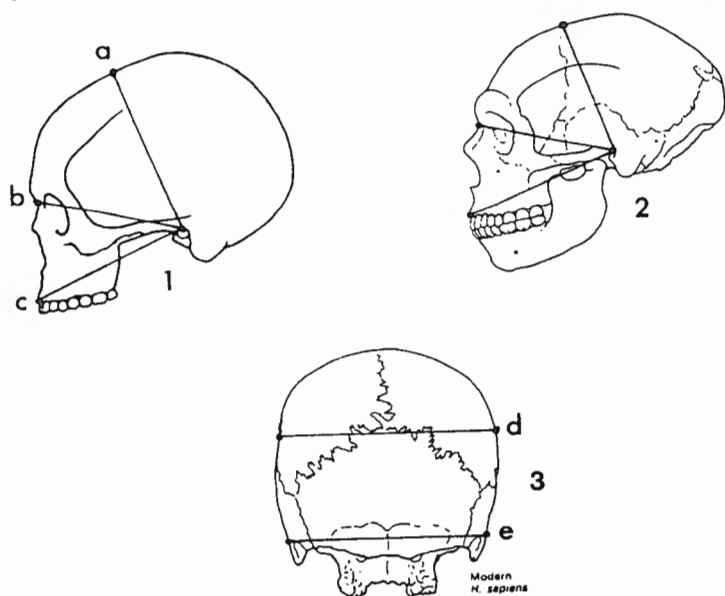


Fig. 6: Comparative cranial measures (see table in text) shown on specimens of anatomically modern *Homo sapiens* (1, 3) and "classic" Neandertal (2). Measures shown are: (a) PoBr [cranial height], (b) PoNa [upper facial length], (c) PoPr [upper jaw length], (d) Maximum cranial breadth and (e) BiPo [Bi-porion breadth].

fashion in many studies of northeast European Mesolithic and Neolithic skeletal material (see, e.g., Denisova 1975), who first divides the important Zvejnieki sample into "long-headed" and "broad-headed" types and then proceeds to study and compare these subsets). There is in such analyses, just as in the "experiment" here, an identical, fundamental, complete and irrevocable divorce between statistical significance on the one hand and biological significance on the other. Thus born of *ad hoc* argument, diagnosis of "anthropological types" is without any possible relevance to the study of evolutionary or population biological process. Because such types merely are asserted and are wholly unsupported by any serious theoretical foundation, they are naught but biological fictions.

Theoretical constraints on the typological urge

The overriding implication of the preceding discussion is that if there is an expectation that multiple ethnic or anthropological types are to be found in a sample, this expectation must be justifiable, *a priori*, on theoretical grounds. This essential precept therefore leads to the second level on which to critique the search for anthropological types: Under what conditions is it to be expected that human groups will become biologically differentiated from one another and, furthermore, that they then will maintain their distinctions despite their cohabitation of the same geographic areas? Of fundamental importance in this regard is the recognition by population biological theory that differentiation of animal populations, including those of our own species, require distance (e.g., Mayr 1976). The flow of genes between populations diminishes — thereby raising the possibility of their phenotypic differentiation — in direct proportion to the increasing distance between them (Cavalli-Sforza and Bodmer 1971). Moreover, this distance need not be geographic, for it also can be imposed by inter-populational barriers to gene flow created by those linguistic and/or other socio-cultural markers whereby people construct distinctions between "us" and "them." However, it would be an error to assume that such social boundaries — such behavioral impediments to gene flow — were the rule during all periods of human prehistory. Nevertheless, it is at just this point where the imposition of biological types on pre-Indo-European northeast Europe has gone further astray.

A useful concept in trying to understand this assertion is that of the *connubium* or "mating network." The mating network is simply that aggregation of groups from which a member of a given focal

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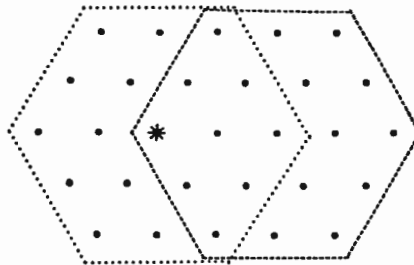
group — the group responsible for the creation of the Oleni' ostrov cemetery, for instance — will obtain a mate. Such networks exist for all mammal species. The requisite size of any animal's mating network depends upon its species' reproductive physiology and demographic structure. For humans, the needed base population size has been calculated as being between 400 and 500 individuals (Wobst 1976). Should the size of the network fall below this level, there will be a consequent increase in the probability that any given member of the network will not be able to find a mate upon reaching maturity. This then places the group in danger of being unable to biologically and socially reproduce itself.

Because humans, along with the other mammals, possess as a guiding principle in our activities what has been called the "Least Effort Principle" (Sahlins 1972), it seems that, all other things being equal, the closest available mate within one's connubium generally is chosen (see, e.g., Harrison and Boyce 1972). Given the consequences of mating network collapse, it is evident that there is considerable risk and no apparent payback involved in taking a mate at a greater distance from oneself than is necessary. There is a clear feedback relationship here between this mate-choice pattern and the fact that distance serves to genetically isolate groups. In addition, the deep dependence of the establishment and maintenance of a mating network upon the distances between the constituent parts of the network — i.e., the population densities of the groups integrated into the connubium — is similarly clear. Only at relatively high population densities does it become feasible for locally or even regionally based connubia to define themselves as closed units. In such wholly endogamous units all members will mate within the network, ignoring the presence of other available mates in adjacent areas, a practice which typically both gives rise to and then in turn is reinforced by linguistic, ideological and other socio-cultural barriers.

These observations are pertinent because human groups during the Mesolithic and Neolithic in northeast Europe most likely lived at population densities between 0.5 and 0.05 persons per square kilometre (Dennell 1983; Weiss and Maruyama 1976). This does not imply that groups were uniformly distributed in all places or throughout all periods or seasons within any given period. This estimate simply is a reasonable extrapolation from the known densities of extant hunter-gatherers and low-intensity horticulturalists, groups whose subsistence ecology and resultant population structure should resemble most

strongly the state of pre-Bronze Age northeastern Europe. At such a density, the cost in distance for the maintenance of a closed mating network is over 35% greater than that for the maintenance of an open mating network, wherein individuals are free to choose a mate from the next nearest neighboring group (Fig. 7). Given the absence of compelling reasons to expect individuals or groups to accept such heightened costs, relatively open connubia would have persisted until at least the middle, if not late Neolithic (Zvelebil 1993).

The consequences of this open mating network structure for potential gene flow are enormous. Without the centripetal effect of the closure of social boundaries, it is to be expected that low density populations should have a far higher gene flow rate across greater expanses of geography. Indeed, measured rates for Australian aboriginal tribes who, relative to modal hunter-gatherers, possess fairly restrictive marriage rules, are nonetheless on the order of 7.4%. Estimates of out-group gene frequencies for a series of low-intensity horticulturalists run as high as 30%. To put these figures into some sort of meaningful context, Weiss & Maruyama (1976) and others have calculated that an effective gene flow between two adjacent groups of



Summed distances from a given local group to all other local groups in mating network (at 0.01 persons/km²)

(1) Summed distances from central group in closed mating system to all other groups	2157 km
(2) Summed distances from marginal group in closed mating system to all other groups	3337 km
(3) Summed distances from any local group in open mating system to the other groups it exchanges mates with	2157 km

Fig. 7: Graphic illustrates the difference between the distances involved when a member of a local group is free to choose the nearest available mate (left-hand hexagon) that implied when the individual must find a mate within a closed mating network (right-hand hexagon). (Adapted from Wobst 1976).

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no greater than 5% is more than sufficient to prevent the significant biological differentiation of the groups in question. By comparison, the measured rate of gene flow between more intensive agriculturalists, such as were not present until the later Bronze Age in northeast Europe, is roughly 1-2%. At this level, gene flow would not have been enough to stem entirely the genetic differentiation of increasingly sedentary, increasingly dense and endogamous populations.

Thus modern population genetic and population biology models predict that gene frequencies would have varied in a clinal or continuously graded fashion in Mesolithic, Neolithic and early Bronze Age Eurasia. Cranial and other skeletal morphological features, to the extent that they are genetically coded, therefore should vary in a similar fashion across space. The greatest skeletal differentiation would be evident between groups at the geographic extremes of this Eurasian range, in accordance with the differentiating effects of distance. Populations towards the middle of the geographic range, for example in northeast Europe and the circum-Ural, should show intermediate frequencies of any and all genetic and morphological features which are in high frequency at either of the far ends of the geographic range. Only with the later development of closed connubia would there have been the potential for the development of discontinuous distributions of genetic features. Only then would it be remotely justifiable on theoretical grounds to suggest that what have long been called "anthropological types" could be expected to develop and, perhaps, to co-occur as distinct biological entities either in a small region or within the confines of a single cemetery.

Conclusion

We have attempted to make two points here.

1. In the absence of sound *a priori* theoretical warrant for the assumption that discrete and distinct biological entities are present in a skeletal population, the sub-division of such a sample into constituent anthropological types is wholly and simply an arbitrary typological procedure. The resulting sub-groups of individuals within a site sample are of dubious biological significance, despite any innovative or sophisticated statistical analyses which might be employed.

2. Modern population biology is able to describe in detail the genetical and demographic structures which are a prerequisite for the development of morphologically distinct biological entities in a wide-ranging and exogamous species such as *Homo sapiens*. These

prerequisite conditions, among which is the closure of local groups to previously open and far-ranging gene flow, did not begin to become seriously established in Northern Europe until the Neolithic/Bronze Age transition. Thus traditional claims for biologically distinct "anthropological types" *cum* (proto)ethnoses in pre-Indo-European northeast Europe break down on theoretical grounds. "Anthropological types" therefore are yet another example of how artificially imposed, socially constructed classificatory schemes serve to obfuscate and conceal, rather than explain and reveal.

Were this their sole fault, "anthropological types," being on a conceptual par with phlogiston, disease-causing miasmas and luminiferous aethers, would merit no more concern than do these other pre-scientific curiosities. Yet biological/cultural/linguistic typologies constructed on foundations assembled from the vestiges of the prehistoric past are an increasingly valued currency in myriad late twentieth century political and ideological battles, in which control of life and land is contested among variously defined groups of "us" and "them" (Chernykh and Kohl 1994; Kohl and Tsetschladze 1995; Ligi 1993; Markovin 1994). Indeed, the late Estonian archaeologist Priit Ligi (1993) wrote compellingly about the moral implications of prehistoric research in today's climate of intolerance and frequently violent conflict between ethnicities and nationalities. Ligi suggested that, for reasons of immediate politics, students of prehistory have been too anxious to project as far back as possible into the prehistoric past those ethnic and other distinctions which are attested in our histories and which we now contest in our troubled present. And he argued that continuation of this approach was morally indefensible. We cannot but agree with his assessment and have offered the present paper's cautionary tale in corroboration of it. Bioanthropologists are adept at finding precisely those ethnic and anthropological types in their prehistoric samples that they assume from the outset are in fact there to be found. It is our hope that critical examination of the methods and assumptions informing such work will prove in some small measure to be an impetus to undertake the crucial process of questioning the wisdom and virtue of this approach to human biological variation, past or present.

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Changes of Population Biological Status during Indo-Europeanization in Lithuania

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The process of Neolithization in general can be understood as a transition from foraging (hunting and gathering) to a food-producing economy ("The Neolithic Revolution"), and this process in the eastern Baltic region was to a great extent related to Indo-Europeanization. Both processes can be expected to have great impact on the demographic and morphological structure of the population, as the changes in subsistence strategies can mean dramatic change in physical activities, diets, an increase of population density and number of individuals in a group and, in cases where agriculture prevails, a shift to a more sedentary way of life. This in turn leads to certain differences in morbidity and mortality, processes of individual growth and maturation and, as a consequence, changes in the morphology of the skeleton.

On the other hand, Indo-Europeanization in Lithuania is associated with the spreading of the Corded Ware pottery and the Boat-Shaped Battle-Axe culture and its bearers, who are characterized by distinct morphological peculiarities, that, especially cranial morphology, are discussed in other papers (Česnys 1991). Thus, the main goals of this contribution are to describe demographic data and morphological characteristics of postcranial skeletons of materials available at this moment in Lithuania and to try to evaluate two hypotheses:

1. Expected differences in skeletal morphology and body build can be attributed to the consequences of cultural adaptation to the changes in the modes of subsistence.
2. These differences are a reflection of the changes in the gene pool taking place during the hybridization of local pre-Indo-European and immigrant Indo-European populations due to demic expansion.

This simplified explanation by no means excludes a combination of both processes.

Materials and methods

In total, the remains of thirty-one individuals from the Mesolithic and Neolithic periods were the object of recent analysis. The majority of these remains are fragmentary or limited to the skull. This limitation in turn made more elaborate statistical analysis problematic.

Mesolithic materials from the Nemunas and Narva cultures included an individual from Kirsna (only the skull was preserved) and graves 3 and 4 from Spiginas, dated 7470 ± 60 BC (Butrimas 1992). The economy of the Mesolithic population was based on fishing, hunting and gathering without any food producing, as scanty grave materials (elk and beaver teeth and a flint arrowhead) and pollen analysis show.

Lithuanian Neolithic materials are represented by early and middle Neolithic sites at Turlojiškė, Spiginas and Kretuonas which are local Narva and Nemunas cultures. Their hunting, fishing and gathering subsistence strategies gradually expanded to include domesticated plants and animals. Local Neolithic Narva and Nemunas culture populations are characterized as hunting, fishing and gathering and demonstrate great abilities at rational exploitation of the natural environment (a continuation of the 'Mesolithic' type of economy, as at the Biržulis, Kretuonas and Šventoji complexes). Indeed, up to the early Bronze Age, as Eastern Lithuanian finds show, it seems that a foraging economy was dominant in these cultures: domesticated animals in the middle Neolithic make up only 2.9% of the whole palaeo-osteological material, reaching only 9.1% in the early Bronze Age. A similar situation can be observed in Eastern Latvia. Graves of bearers of the Corded Ware culture that are associated with a food producing economy, mostly husbandry, are scarce. Only one complete and two fragmentary skeletons from Plinkaigalis and one from Spiginas were available for analysis. Finally, the late Neolithic Baltic Coastal (Pamarių) culture is represented by the most numerous finds, mainly from Western Lithuania. Nida, Šventoji, Šarnelė and Donkalnis settlements are represented by the whole complex of agricultural implements. Pollen and seed analyses show that emmer wheat (*Triticum dicoccum*), barley (*Hordeum*), millet (*Panicum*), hemp (*Cannabis*) and mallow (*Malva*) were cultivated. The main domestic animals were cattle, sheep, goats, pigs and horses. Even in the early phase, domestic animals made up over 39.5% of the total and were even more numerous at the Donkalnis settlement. At the same time,

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cultural traditions throughout the period preserved strong archaic features of a foraging economy, but definite agricultural influences were detected. Thus their subsistence can be described as a certain stage of a food-producing economy.

Skeletal material of the period under discussion can be divided into four cultural-chronological groups:

1. Mesolithic (ninth to fifth millennia BC) — a “pure” foraging economy.

2. Early and middle Neolithic (fourth to second half of the third millennium BC) Nemunas and Narva — mostly foraging with weak evidence of food producing.

3. Middle Neolithic (second half of the third millennium BC) Corded Ware culture — mostly food producing, based on husbandry and believed to be immigrants from the south.

4. Late Neolithic (end of the third millennium BC to the middle of the second millennium BC) Baltic Coastal (Pamarių) culture — a syncretic culture of the two listed above, economy based both on agriculture and foraging.

Sex and age of individuals was estimated according to conventional morphological criteria of the pelvis and skull (Acsádi and Nemeskéri 1970; Krogman 1973; Ferembach et al. 1980). Demographic data were calculated with the help of traditional methods (Acsádi and Nemeskéri 1970; Piontek 1985; Ubelaker 1989). Standard osteometric analysis (Martin and Saller 1957) was also carried out.

Results and discussion

As population dynamics (demographic data) in some way reflects a population's ability to adapt biologically and culturally to the environment, we have made an attempt to characterize Lithuanian Neolithic populations in this aspect. Due to a paucity of materials (seventeen graves available for demographic analysis), we were forced to pool materials from Nemunas, Narva, Corded Ware and Baltic Coast cultures, thus our data should be considered as an approximation. The demographic situation is characterized by two main indices — fertility and mortality rates. Materials for comparison were taken from the Neolithic of neighboring countries (Piontek and Marciniak 1990). Both adult average life expectancy (index of mortality — e°_{20}) and potential reproduction rate (index of fertility — R_{pot}) in the Lithuanian Neolithic are lower than in majority of surrounding regions (Table 1). It means that the demographic situation at that period in Lithuania was

worse than in neighboring countries. Thus, one could expect demic expansion and immigration of people with better demographic indices (better adaptation) from the south and southwest regions.

Male bone lengths (Table 2) demonstrate notable regularities. Corded Ware (Spiginas) had the longest bones, and Nemunas and Narva had the shortest, with the Baltic Coastal falling between the two. Correspondingly, stature, as calculated using Lithuanian forensic medical equations (Garmus and Jankauskas 1993), was highest in the Corded Ware sample — 178.3 cm, while that of the Nemunas and Narva cultures was only 160.3 cm; the Baltic Coastal fit well into the middle of the range (168.2 cm).

Similar regularities were found for females (Table 3): Corded Ware bone lengths exceed the total average, and Nemunas-Narva were well below. Baltic Coastal female bone lengths are between those two extremes. Similarly, Corded Ware female stature was 152.9 cm, while that of Nemunas-Narva was only 147.2 cm, and that of the Baltic Coastal was 150.2 cm. It should be noted that our Mesolithic females from Spiginas had comparatively high values for bone lengths, differing significantly from Nemunas-Narva, and their average stature was 155.0 cm.

In contrast, male arm bone circumferences and indices (Table 4) show reverse regularities: Corded Ware forearm bones are thinner than average, and Nemunas-Narva are thickest. Baltic Coastal people again fall in between the Narva and Corded Ware indices. For females (Table 5), different regularities were noted: in most cases Corded Ware bones were thickest, while Baltic Coastal were thinnest. Females of the Nemunas-Narva cultures fall in between the range.

The lower extremity circumferences and indices for males (Table 4) are similar to the bone lengths in as far as they can be determined from the fragmentary materials. Corded Ware leg bones are thickest, and Nemunas-Narva the thinnest. For females (Table 5), the regularities are slightly different; in many cases Nemunas-Narva bones are thickest, while Corded Ware bones, especially the tibia are thinner. One more peculiarity should be noted. Both for arm and leg bones, Mesolithic female measurements and indices differed significantly from the Nemunas-Narva foragers.

Diaphyseal cross-section indices that describe the form of diaphysis, demonstrate great variability for males (Table 6). In this case one fact seems to be worthy of attention: Corded Ware males differ dramatically from the average. The same can be said about

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females (Table 7). Such marked deviations from the rounded shape of diaphyseal cross-sections can indicate great loadings due to muscle strain. In this case, this could point to higher physical activities of the Corded Ware culture people. On the other side, Corded Ware pottery bearers are characterized by the great robusticity of the skull too (hypermorphy) — a fact that can be associated to certain common factor of the same genetic origin of general skeletal massiveness.

Summing up, our Neolithic foragers can be characterized as having short limb bones (and correspondingly short stature) with thick, rounded diaphyses. As much as can be judged from our fragmentary data, their body build could be characterized as brachymorphic. Corded Ware people had substantially longer bones and greater stature, more massive skeletons with marked muscle insertions. Baltic Coastal people usually find their place somewhere between these two extremes.

In attempting to evaluate the extent to which acculturation via adoption of agriculture had influenced skeletal morphology, we addressed a larger time scale, comparing data from our Iron Age (first millennium AD). Both for males (Table 8) and females (Table 9) a definite increase of stature and leptosomization (decrease of the Quetelet, Livi and Rohrer indices) is evident in stature, arm and leg length as estimated with Lithuanian forensic equations, body weight as determined according Debetz and Durnovo (1971) and shoulder breadth (Piontek 1979). This general phenomenon is to some extent reflected by our Neolithic data as well. But the only such explanation at this moment seems to be insufficient, as paleodemographic data suggest certain demic expansion and, subsequently, gene inflow from the south (both life expectancies and potential reproduction rates seem to be higher in the majority of our southern neighboring regions). Thus a combination of two processes — changes in postcranial morphology both due to acculturation and genetic influences — seems to be the most acceptable explanation.

Quantitative evaluation of both processes is difficult to achieve using only our data. Besides, at least two methodological problems must be solved: To what extent is postcranial morphology determined genetically? How can phenotypic expression of genetic potential be modified by changes in lifestyle?

Answers to both questions should be sought only on larger geographical and chronological scales. Thus, this paper should be considered as a challenge for such exploration.

Sample	e°20	Rpot
Lithuanian Neolithic	17.50	0.621
Poland, Neolithic*	24.03	0.719
Elbe-Saale, Neolithic*	17.41	0.599
Bohemia-Moravia, Neolithic*	17.22	0.631
Carpathian Basin *	20.81	0.682
Ukraine, Neolithic*	20.60	0.687
* from Piontek and Marciniak (1990)		

Table 1: Demographic data of Lithuanian and other Neolithic samples

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Culture	Measurement	Side	N	M	S
Nemunas-Narva	H1	L	2	300.00	4.00
		R	-	-	-
	R1	L	1	231.00	-
		R	-	-	-
	U1	L	-	-	-
		R	-	-	-
	F1	L	2	411.50	3.50
		R	-	-	-
	T1	L	-	-	-
		R	-	-	-
Corded Ware	H1	L	-	-	-
		R	-	-	-
	R1	L	-	-	-
		R	1	269.00	-
	U1	L	1	285.00	-
		R	-	-	-
	F1	L	-	-	-
		R	-	-	-
	T1	L	-	-	-
		R	-	-	-
Baltic Coastal	H1	L	2	325.00	6.00
		R	1	330.00	-
	R1	L	2	244.00	1.00
		R	2	240.50	4.50
	U1	L	1	267.00	-
		R	-	-	-
	F1	L	2	449.50	0.50
		R	1	445.00	-
	T1	L	1	367.00	-
		R	1	368.00	-

Table 2: Male bone length of Lithuanian Neolithic samples (in mm; H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Culture	Measurement	Side	N	M	S
Nemunas-Narva	H1	L	-	-	-
		R	-	-	-
	R1	L	-	-	-
		R	-	-	-
	U1	L	-	-	-
		R	-	-	-
	F1	L	1	382.00	-
		R	1	380.00	-
	T1	L	1	298.00	-
		R	1	295.00	-
Corded Ware	H1	L	1	272.00	-
		R	1	275.00	-
	R1	L	1	214.00	-
		R	1	217.00	-
	U1	L	1	239.00	-
		R	1	239.00	-
	F1	L	1	387.00	-
		R	1	386.00	-
	T1	L	1	326.00	-
		R	1	327.00	-
Baltic Coastal	H1	L	1	256.00	-
		R	1	260.00	-
	R1	L	2	188.00	5.00
		R	2	214.00	19.00
	U1	L	1	221.00	-
		R	1	219.00	-
	F1	L	2	394.00	31.00
		R	4	379.75	25.59
	T1	L	2	308.00	11.00
		R	?	295.00	0.00

Table 3: Female bone length of Lithuanian Neolithic samples (in mm; H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Changes of Biological Status

Culture	Measurement	Side	N	M	S
Nemunas-Narva	H7	L	3	66.67	10.78
		R	2	74.00	8.00
	H (7:1)	L	2	23.25	3.35
		R	-	-	-
	R3	L	1	56.00	-
		R	1	47.00	-
	R(3:2)	L	1	25.30	-
		R	-	-	-
	U3	L	1	41.00	-
		R	1	32.00	-
	U(3:2)	L	-	-	-
		R	-	-	-
	F8	L	3	87.33	4.50
		R	2	90.00	2.00
	F(8:2)	L	1	19.40	-
		R	-	-	-
	T10	L	4	83.25	3.56
		R	3	83.33	3.40
	T(10:1)	L	-	-	-
		R	-	-	-
Corded Ware	H7	L	1	66.00	-
		R	-	-	-
	H(7:1)	L	-	-	-
		R	-	-	-
	R3	L	1	44.00	-
		R	1	41.00	-
	R(3:2)	L	-	-	-
		R	1	16.20	-
	U3	L	1	38.00	-
		R	1	37.00	-
	U(3:2)	L	1	15.80	-
		R	-	-	-
	F8	L	1	88.00	-
		R	1	88.00	-
	F(8:2)	L	-	-	-
		R	-	-	-

Table 4: Male bone circumferences (in mm) and circumference to length ratios (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Culture	Measurement	Side	N	M	S
	T10	L	1	89.00	-
		R	1	90.00	-
	T(10:1)	L	-	-	-
		R	-	-	-
Baltic Coastal	H7	L	4	67.75	1.09
		R	6	67.00	2.38
	H(7:1)	L	2	21.20	0.10
		R	1	20.90	-
	R3	L	2	42.00	0.00
		R	3	45.00	2.16
	R(3:2)	L	2	18.55	0.15
		R	2	20.35	0.65
	U3	L	2	39.50	0.00
		R	-	-	-
	U(3:2)	L	1	16.70	-
		R	-	-	-
	F8	L	6	87.50	5.12
		R	5	88.80	3.54
	F(8:2)	L	2	20.95	0.85
		R	1	21.40	0.68
	T10	L	3	82.33	4.92
		R	5	84.20	3.76
	T(10:1)	L	1	24.00	-
		R	1	23.40	-

Table 4 (cont.): Male bone circumferences (in mm) and circumference to length ratios (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Changes of Biological Status

Culture	Measurement	Side	N	M	S
Nemunas-Narva	H7	L	2	57.00	0.00
		R	2	56.50	1.50
	H(7:1)	L	-	-	-
		R	-	-	-
	R3	L	2	36.00	1.00
		R	1	37.00	-
	R(3:2)	L	-	-	-
		R	-	-	-
	U3	L	1	35.00	-
		R	-	-	-
	U(3:2)	L	-	-	-
		R	-	-	-
	F8	L	2	77.00	3.00
		R	3	78.67	3.40
	F(8:2)	L	1	19.60	-
		R	1	19.50	-
Corded Ware	T10	L	1	73.00	-
		R	1	72.00	-
	T(10:1)	L	-	-	-
		R	-	-	-
	H7	L	1	60.00	-
		R	-	60.00	-
	H(7:1)	L	1	22.10	-
		R	1	21.80	-
	R3	L	1	37.00	-
		R	1	39.00	-
	R(3:2)	L	1	18.30	-
		R	1	18.90	-
	U3	L	1	35.00	-
		R	1	34.00	-
	U(3:2)	L	1	17.20	-
		R	1	16.70	-
	F8	L	1	77.00	-
		R	1	77.00	-
	F(8:2)	L	1	20.10	-
		R	1	20.20	-

Table 5: Female bone circumferences (in mm) and circumference to length ratios (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Culture	Measurement	Side	N	M	S
	T10	L	1	70.00	-
		R	1	70.00	-
	T(10:1)	L	1	21.50	-
		R	1	21.50	-
Baltic Coastal	H7	L	4	54.75	3.11
		R	4	55.75	3.70
	H(7:1)	L	1	21.10	-
		R	1	21.10	-
	R3	L	3	35.33	2.62
		R	3	34.67	3.86
	R(3:2)	L	3	18.47	0.33
		R	2	18.20	0.10
	U3	L	3	34.10	2.16
		R	1	31.00	-
	U(3:2)	L	2	17.10	0.00
		R	1	17.20	-
	F8	L	4	74.75	4.21
		R	3	74.67	4.50
	F(8:2)	L	2	19.65	0.35
		R	4	20.10	0.68
	T10	L	4	69.75	7.95
		R	3	70.33	7.59
	T(10:1)	L	2	21.10	0.20
		R	2	22.05	0.35

Table 5 (cont.): Female bone circumferences (in mm) and circumference to length ratios (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Changes of Biological Status

Culture	Measurement	Side	N	M	S
Nemunas-Narva	H(6:5)	L	3	80.70	4.20
		R	2	74.40	7.70
	R(5:4)	L	2	65.26	6.16
		R	1	80.00	-
	U(11:12)	L	2	66.84	3.74
		R	2	88.90	1.10
	U(13:14)	L	3	85.84	4.24
		R	2	90.91	9.09
	F(6:7)	L	3	107.53	3.08
		R	3	111.17	5.32
	F(9:10)	L	4	79.00	5.73
		R	2	81.30	8.30
	T(9a:8a)	L	3	71.60	8.95
		R	1	57.10	-
	T(9:8)	L	4	72.78	10.37
		R	3	67.67	5.09
Corded Ware	H(6:5)	L	1	86.40	-
		R	-	-	-
	R(5:4)	L	1	72.20	-
		R	-	-	-
	U(11:12)	L	1	73.70	-
		R	-	-	-
	U(13:14)	L	1	72.40	-
		R	-	-	-
	F(6:7)	L	1	100.00	-
		R	1	103.70	-
	F(9:10)	L	1	76.50	-
		R	1	73.50	-
	T(9a:8a)	L	1	57.50	-
		R	1	60.50	-
	T(9:8)	L	1	68.70	-
		R	1	66.70	-

Table 6: Male bone diaphyseal cross=section indices (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Culture	Measurement	Side	N	M	S
Baltic Coastal	H(6:5)	L	4	78.65	5.14
		R	6	79.29	6.05
	R(5:4)	L	2	75.75	0.75
		R	3	73.13	2.64
	U(11:12)	L	3	75.51	2.38
		R	2	83.10	1.90
	U(13:14)	L	3	95.78	3.39
		R	3	94.18	1.77
	F(6:7)	L	6	101.10	5.78
		R	5	103.51	4.56
	F(9:10)	L	5	74.48	1.99
		R	4	73.73	2.12
	T(9a:8a)	L	2	64.70	2.90
		R	3	63.06	2.63
	T(9:8)	L	4	69.96	5.02
		R	4	69.70	4.57

Table 6 (cont.): Male bone diaphyseal cross=section indices (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Culture	Measurement	Side	N	M	S
Nemunas-Narva	H(6:5)	L	3	79.10	8.47
		R	2	75.70	4.30
	R(5:4)	L	2	66.68	10.02
		R	2	67.28	0.58
	U(11:12)	L	1	100.06	-
		R	1	73.33	-
	U(13:14)	L	1	94.44	-
		R	2	92.50	7.50
	F(6:7)	L	2	104.35	4.35
		R	3	105.33	3.77
	F(9:10)	L	1	71.00	-
		R	2	82.10	10.20
	T(9a:8a)	L	1	65.50	-
		R	-	-	-
	T(9:8)	L	1	63.00	-
		R	1	63.00	-

Table 7: Female bone diaphyseal cross=section indices (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Changes of Biological Status

Culture	Measurement	Side	N	M	S
Corded Ware	H(6:5)	L	1	77.30	-
		R	1	69.60	-
	R(5:4)	L	1	73.70	-
		R	1	68.70	-
	U(11:12)	L	1	93.30	-
		R	1	100.00	-
	U(13:14)	L	1	85.00	-
		R	1	82.60	-
	F(6:7)	L	1	88.50	-
		R	1	88.50	-
	F(9:10)	L	1	74.20	-
		R	1	80.00	-
	T(9a:8a)	L	1	76.70	-
		R	1	74.10	-
	T(9:8)	L	1	76.00	-
		R	1	83.30	-
Baltic Coastal	H(6:5)	L	4	75.40	5.36
		R	4	72.98	3.44
	R(5:4)	L	3	71.67	3.58
		R	3	69.43	6.71
	U(11:12)	L	3	84.00	5.89
		R	3	86.37	6.98
	U(13:14)	L	3	86.41	4.88
		R	2	91.30	8.70
	F(6:7)	L	3	110.37	4.37
		R	4	106.55	7.17
	F(9:10)	L	3	76.20	0.85
		R	4	76.80	6.28
	T(9a:8a)	L	4	63.73	8.98
		R	3	65.13	4.86
	T(9:8)	L	4	67.82	9.77
		R	4	70.53	8.07

Table 7 (cont.): Female bone diaphyseal cross=section indices (in percent) of Lithuanian Neolithic samples (H = Humerus, R = Radius, U = Ulna, F = Femur, T = Tibia; N = sample size, M = mean, S = standard deviation)

Index	Neolithic	First Millennium AD
Stature, cm	163.48	172.80
Weight, kg	74.10	77.49
Shoulder breadth, cm	39.05	-
Arm length, cm	73.13	78.40
Leg length	85.33	93.50
Shoulder breadth index, %	23.55 (broad)	-
Arm length index, %	44.73 (short)	45.37 (average)
Leg length index, %	52.19 (short)	54.11 (short)
Intermembral index, %	86.28 (average)	83.85 (legs longer)
Body build:		
Quetelet:	453.27 (very massive)	448.44 (very massive)
Livi:	25.69 (very massive)	24.67 (massive)
Rohrer:	1.70 (massive)	1.50 (massive)

Table 8: Male somatometric data

Index	Neolithic	First Millennium AD
Stature, cm	149.90	160.40
Weight, kg	53.11	64.88
Shoulder breadth, cm	33.99	-
Arm length, cm	64.50	71.20
Leg length	76.70	84.80
Shoulder breadth index, %	22.83 (broad)	-
Arm length index, %	43.32 (short)	44.39 (short)
Leg length index, %	51.51 (short)	52.87 (short)
Intermembral index, %	84.09 (legs longer)	83.96 (legs longer)
Body build:		
Quetelet:	356.68 (very massive)	404.49 (very massive)
Livi:	25.24 (very massive)	25.05 (very massive)
Rohrer:	1.61 (massive)	1.57 (average)

Table 9: Female somatometric data

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Methods of Evaluation of the Auto-Identification Test in Physical Anthropology (analysis of some morphologic and psychologic after-effects of Indo-Europeanization in Northwestern Russia)¹

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Anthropological data obtained by different scholars in the northwestern region of Russia provides valuable information about the influence of the Finnish substratum on the physical type of the modern population. The Indo-Europeanization process of this area resulted in a "two-component" anthropological structure of the groups inhabiting the Vologda and neighboring regions. The purpose of the present paper is to reveal the consequences of interaction between the expanding Slavic groups and the Finnish substratum in the process of forming the local Vologda population by applying an unusual method based on comparison of the "real" and "ideal" (preferred) types of facial features.

The substantial role of the variability of facial types in the process of race formation is an indisputable fact. As early as the last century, Charles Darwin pointed out the importance of human appearance for sexual selection. He even assumed that some criteria of beauty could become hereditary. At any rate, every human group supposedly has its own ideal of appearance. That is why physical anthropologists have begun to take an interest in the detailed analysis of the aesthetic preference of morphotypes on a populational scale by means of quantitative description of facial features. The question is raised whether an intra-group's preferred ideal type really exists and how it correlates to the actual predominant morphological facial type of a given population. In other words, to what extent is the phenotypic diversity of a group reflected in its esthetic notions about ideal appearance, i.e. what is the degree of auto-identification in the

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Evaluation of the Autoidentification Test

formation of any ideal model. By the term "auto-identification" we mean the aesthetic self-evaluation of the prevailing physical type of a group expressed in statistical parameters. Essentially the question is about a possible aesthetic component of sexual selection (if the latter was able to take place). The data on the aesthetic preference of morphotype are important in the analysis of ethno-stabilizing or ethno-dispersing tendencies in different human groups. This can have direct connection with the prognostic investigations of hybridization probability and homoeostatic conservation of the populational anthropological specificity. Furthermore, according to theoretical expectations, the data on the aesthetic preference can be used as a criterion of multi-component structure of the population under study reflecting the bygone or ongoing process of interaction between the autochthonous and migrant groups. So a mixed population exhibits a pronounced discrepancy between the "real" and "ideal" types unlike the stable homogeneous groups which display close resemblance between the two types. To characterize this phenomenon a special index, the auto-identification test, was introduced which is based on the ratio between the real and ideal types of the group.

If the biological contact between the autochthonous and migrating groups took place or is taking place, this may be reflected in the auto-identification test's showing deviation of the ideal image from the single local model which is conducive to the formation of a multi-component ideal structure.

The situation in the European part of Russia provides a good opportunity for subjecting this test to a comparative analysis bringing out the bio-psychological influence exerted by the Indo-Europeanization process of the given territory.

Investigations in rather close fields are carried on in different countries. Among them should be mentioned the articles published by B. Riedle of Australia (1990), Y. Strzalko and K. Kaszycka (1994) of Poland, A. Kelemen (1981) of Hungary, D. Pertet, K. May and S. Yoshikawa (1994) of Japan. However, the authors of these publications focus their attention on the study of mate selection and often confine themselves to the analysis of assessments of the opposite sex only. Unfortunately, attention was not paid to ethnic aspects of the problem either. Practically all the cited authors use a photo-method or computer composite images. As a result, the examinees have to evaluate the ideal appearance as a whole; in this way the assessment is often influenced by many secondary factors which cannot be taken into

account as, for example, eye expression, light and shade conditions, haircut etc. Moreover, the total assessment does not provide physical anthropologists necessary information about the aesthetic meaning of single traits against the background of the complete range of their variation. In contrast to such an approach, we analyzed the aesthetic perception of facial features of men and women by both sexes taking into account not only assessments of the opposite sex but also the same sex as well. Besides, in our study the examinee does not assess the face as a whole but examines single facial features separately.

The methods of collecting data in our investigation are based on the classic anthropological approach of using special standard scales of hair and eye color devised by Prof. V. Bunak (1951), models of the nose and lip variants generally accepted in Russian anthropology and Poch's scale of the human facial outline. Thus, five features characterizing the human face were taken. Later on, another trait — presence or absence of the epicanthus was added. The standards were shown to the examinees who were asked to choose concrete variants of features which they consider most attractive. At the same time the description of the real facial type of the same individuals is performed according to the same scales. All the obtained information is recorded in the individual questionnaire. The age of the examinees in our study ranged from eighteen to twenty-five years, so these results are quite definitive for most psychological characteristics.

In the present investigation, the following ethnic groups were studied. As the main material under study, two samples of Vologda region (two small towns — Ustyuzhna and Kirillow) were taken. As an example of homogeneous groups the Lithuanians and Southern Russians (Stavropol) were introduced. The Bashkirs and Kalmycks represented the dynamic populations which are in constant active genetic interaction with neighboring peoples.

To calculate the autoidentification test (AI), the so-called "primary" variants of five elements of appearance were first singled out, namely: light hair color, light eye color, concave nose form, medium tip thickness (No. 2), moderately broad, elongated form of facial outline (Nos. 1, 2 and 7) and the absence of the epicanthus. The AI-parameter characterizes the degree of association of the real and ideal types by the frequency of primary variants in every group taken, separately for males and females.

The AI-test is calculated as the ratio:
$$\frac{RT-PT}{D_{st}}$$

Evaluation of the Autoidentification Test

The RT and PT are frequencies (in radians) of every given primary variant in the real (RT) and ideal (or preferred) types. The D_{st} is a standard value taken from a special table and dependent on the sample size. It signifies the minimum difference at the threshold of statistical significance at the level of 5% by the given sample size. The table was based on the formula:

$$D_{st} = \sqrt{\frac{2F_{st}}{n}}$$

where F_{st} is Fisher's criterion by the given n , which is, of course, always the same for RT and PT. The value of the AI can be considered statistically significant (i.e. the deviation of PT from RT is significant) when $AI \geq 1$. The AI can be a positive or negative value. It is negative when the ideal frequency of primary variant of the character under consideration exceeds the real one and vice versa.

The accompanying table contains values of the auto-identification test in three Russian groups and three samples taken for comparison. The data on the assessments given by men and women in each group are included into the whole characteristics of the male (M) and female (F) images since the sexual dimorphism in assessments of the same object (man's or woman's ideal type) within all the studied groups proved to be insignificant. So the values given in the table reflect the aesthetic preference of the whole groups irrespective of the sex.

As can be seen, there is a rather high degree of sexual and geographic variability of the test under study. The values obtained are significantly higher in women than in men in all samples taken. In most cases, the AI proves to be below 1 in males and exceeds 1 in females. This means that the male ideal type is more closely connected with the real one as compared to females. These data confirm our previous conclusion that the aesthetic preference of ideal morphotype, at least in males, is to a very great degree based on the real morphologic parameters of each ethnic or local group (Zubov and Haldeyeva 1993), so the ideal type can, to a certain extent, be regarded as one of the populational characteristics. There are differences between single facial features. The highest values were obtained in the facial outline of females owing to the common, strongly pronounced tendency to choose the types 2-7 (elongated, rather narrow faces) as the ideal forms.

To compare the auto-identification test in different ethnic and territorial groups, average values of the AI have been used in which the indices of males and females are combined.

The accompanying Figure is based on these data and characterizes the intergroup variation of the AI plotted on the Y-axis. The graph reflects a rather wide range of variation of the test. The distribution of the groups on the graphic field seems to be interesting and informative.

	sex	hair color	eye color	nose form	lip thickness	face outline	epi- canthus	all traits
Russians of	M	0.48	1.07	0.45	0.57	1.52	-	0.82
Ustyuzhna	F	0.43	1.82	0.72	0.00	2.66	-	1.13
Russians of	M	0.43	0.53	0.70	0.38	0.75	-	0.56
Kirillow	F	0.95	1.40	0.75	2.15	3.10	-	1.67
Russians of	M	1.87	0.32	0.17	0.05	0.10	0.80	0.55
Stavropol	F	1.13	0.58	2.33	0.02	2.05	1.22	1.22
Lithuanians	M	0.40	0.11	1.35	0.47	0.68	-	0.60
	F	2.03	0.50	0.25	0.10	2.27	-	1.03
Bashkirs	M	0.35	0.90	0.02	0.10	0.80	2.77	0.82
	F	0.80	1.82	3.32	1.17	2.77	2.77	2.12
Kalmyks	M	0.38	0.97	0.80	0.42	1.63	2.47	1.11
	F	1.30	1.34	0.92	0.38	5.36	2.70	2.00

Table: The Auto-Identification test in different Ethnic and Local groups

The Lithuanians and Southern Russians, as rather homogeneous groups, occupied positions below the line "1.0" while the Bashkirs and Kalmyks are situated far above this line which testifies to their mixed anthropological composition and further tendency to hybridization. Two groups of Vologda Russians turned out to be in the middle, one of them being more homogeneous and quite close to the line "1.0," of statistical significance and another one (Kirillow) being on the other side of this line. This fact suggests as a conclusion that the manifestations of the "two-component structure" of the Vologda population is perceptible by different methods in the local Russian groups that have a Finnish substratum and a Slavic component brought by the populational waves of Indo-Europeanization. Thus, the results

Evaluation of the Autoidentification Test

of analysis of the aesthetic preference do not conflict with the conclusions of other branches of physical anthropology.

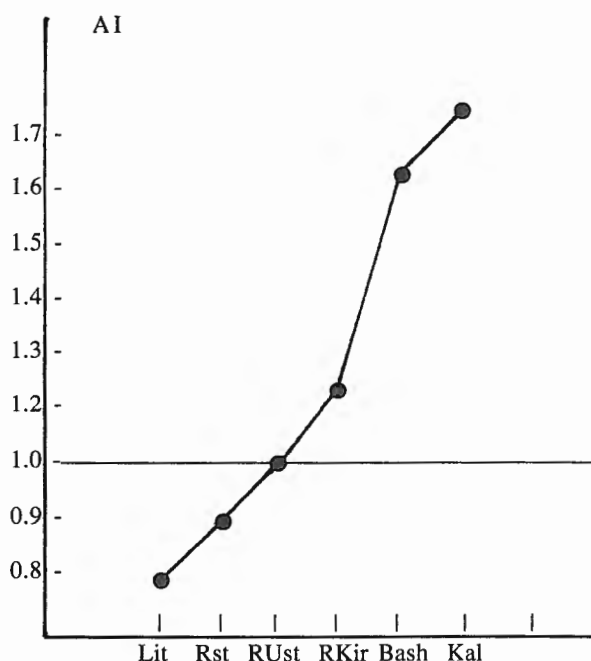


Figure: Graphic representation of variability of the Auto-Identification test (AI) in different ethnic and local groups:

- Lit — Lithuanians
- Rst — Southern Russians of Stavropol
- RUst — Russians of Ustyuzhna (Vologda region)
- RKir — Russians of Kirillov (Vologda region)
- Bash — Bashkirs
- Kal — Kalmyks

The line "1.0" = the limit of statistical significance.

Conclusions

1. The auto-identification test (AI) is a population characteristic closely connected with the real morphotype of the group. Its analysis can give interesting information about the homogeneous or

multicomponent structure of the group under study bringing out the after-effects of past contacts as well as the tendencies to further interaction of groups including hybridization.

2. A comparative analysis of the AI-distribution in different ethnic groups demonstrated a complex structure of the ideal (preferred) morphotype in the Russian groups of Vologda region. The intermediate position of the latter between the anthropologically homogeneous populations and the groups involved in the process of hybridization can testify to the interaction between the local Finnish substratum and new components brought by the waves of the Slavic newcomers in the process of Indo-Europeanization of the northeastern Europeans.

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The Light Eye and Hair Cline: Implications for Indo-European Migrations to Northern Europe

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The homeland of the earliest Indo-Europeans, and their gradual dispersal into the broad area which they now occupy, is an unresolved and complex problem whose solution requires input from many different fields. In this study I discuss the existing cline, or gradient, of lightly-pigmented eye and hair (LEH) phenotypes across Europe and northwest Siberia, and its implications for linguistic models that emphasize large scale movement of early Indo-Europeans into pre-Indo-European northern Europe.¹ I do not propose that LEH pigmentation can be used to "identify" early Indo-European populations or their homeland. Rather, I suggest that clines in these traits, when viewed in evolutionary fashion, are incompatible with there having been major migrations or "waves of advance" into northern Europe from southern homelands in Armenia or Anatolia (Gamkrelidze and Ivanov 1985; Renfrew 1987).

Mallory (1992) has reviewed the evidence drawn from physical anthropology in the study of the Indo-European problem. He

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¹ Most physical anthropologists agree that traditional classification of "race" is arbitrary, and prefer the concept of clinal or gradational distribution to explain human hereditary variation across space.

concludes that none of these studies has satisfactorily determined the location of the Indo-European homeland, but he does not rule out that future such research may prove useful. It is noteworthy that of forty-three studies related specifically to pigmentation and cephalic indices, roughly one half were published before 1908 (the starting date of population genetics), and only seven after 1945. Thus most of the literature in these areas is obsolete and the need for an evolutionary re-examination of the question is self-evident.

Of the light eye and light hair clines, the latter is perhaps the less useful to the study of the Indo-European problem (despite the fact that early studies tended to focus on "blondism"). Hair color shows greater change with age and its heritability is more affected by the environment (Bräuer and Chopra 1978). Many European studies of hair color have been based on school children, whose light hair often darkens with puberty, resulting in exaggerated percentages of blond individuals. In reality, a 40% frequency of blonds in an adult population can be considered high (Brues 1977:100).

Light eye color, however, is an easily identifiable, widespread and long-established trait in northern European populations. With large pre-WWII population samples having been classified by eye color, these data are useful in establishing regional clines in this feature. As well, eye and hair color play important roles in selective mating (Lenz 1970), clearly influencing thereby the impact of gene flow. The geographic distributions of LEH traits, then, should shed light on the possible level and source of such flow during the Indo-Europeanization of northern Europe.

Pigmentation, latitude and the origin of the LEH cline

To understand eye and hair pigmentation in Europe, some background is necessary on the adaptive value of human pigmentation (for a comprehensive review see Brues 1975 and 1977). Anthropologists have long noted the non-random global distribution of human skin color (prior to the 16th century), with more heavily pigmented populations living closer to the equator and lighter populations further away from it.² From an evolutionary perspective,

² That a global correlation of skin color and latitude (Nelson and Jurmain 1991:fig. 6-3) existed up to the 16th century is itself worthy of note. It suggests that large migrations from the Mesolithic onwards have tended to

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dark skin was selected for in tropical areas with high ultraviolet (u-v) solar radiation because of the protection it offered against sunburn (potentially fatal to infants) and skin cancer. With movement into northern latitudes and use of full-body clothing, some hundreds of thousands of years ago, depigmentation began to take place because of the selective disadvantage of Vitamin D deficiency. That is, in low u-v environments dark skin does not permit sufficient sunlight for production of the vitamin within the skin, leading to the contraction of rickets. At its worst, rickets is potentially fatal to children, and, at the least, it prevents the development of a normal-sized female pelvis and complicates child birth (Loomis 1967; Neer 1975). Conversely, light skin in northern latitudes helped to maximize Vitamin D formation, and also may have been less vulnerable to cold injury (Post et al. 1975).

Brues (1977) has presented a compelling argument that at some point further regional mutational adaptation occurred, resulting in an extremely depigmented complex of skin, eyes and hair. Much of the contemporary population of northern Europe (Fig. 1), particularly the peri-Baltic, retains this depigmented complex.³ That it may have had adaptive value within the peri-Baltic area (but not necessarily the present natural environment) is supported by the fact that light eye and hair mutations have been documented in isolated populations in Asia, Africa and Australia — but they have failed to increase (Brues 1977:103).⁴

move latitudinally, rather than longitudinally. This is understandable from a cultural and psychological viewpoint: people are reluctant to move to a different climate zone.

³ Peri-Baltic is a useful geographic term used by Jacobs (1992) which eliminates the ambiguity between the Baltic (Sea) area and the Baltic (ethnic) area of Latvia and Lithuania.

⁴ Egyptian texts refer to light-skinned, blue-eyed Libyans of the Temeh tribes, allies of the southern European "Sea Peoples" who invaded Lower Egypt in 1227 BC (Steindorff and Seale 1957:252). Light-haired Cuman tribes, whose name derives from the eastern Turkic root *qu-* 'pale', migrated west from central Asia to the Black Sea by the eleventh century (Horváth 1989:43). A blue-eyed, light-complexioned Kafir population lives in present day Nuristan, eastern Afghanistan. Farthest to the east are the fair-skinned White Uighurs of Chinese Turkestan. In the third century AD this area was inhabited by the

The existing LEH cline in northern Europe most probably had its origin in Middle/Upper Palaeolithic central Europe when very light pigmentation arose among hunter populations along a periglacial belt extending from France, across central Europe and into northwest Siberia. This tundra environment was very cold, but probably much brighter than the modern Eurasian tundra, because of its lower latitude location. Cold adaptation (i.e. less susceptibility to frostbite) therefore might seem preferable to Vitamin D maximization to account for selection of very light skin pigmentation. The short distal limbs of Neanderthal physiology are generally interpreted as an adaptation to thermal stress (Trinkhaus 1989). Light eyes and hair also would have been predominant, either through their own adaptive value(s), or as neutral elements of a pleiotropic complex.⁵ With glacial retreat, LEH groups followed reindeer populations into the tundra of Denmark and south Sweden, by about 14,000 BP.

A later Palaeolithic origin for the LEH cline provides a long time frame (perhaps >100 kyr) in which the genetic basis of LEH could be established. Such an origin also would explain the near-homozygosity for light-eyed phenotypes in Swedish populations (>95%), which pattern is strongly suggestive of a founder effect (i.e.

Indo-European-speaking Tocharians, depicted on extant wall paintings as having red hair and blue eyes. North of the Tocharians lived the Yuezhi or Wusan nomads, described in Chinese texts of the second century BC as being red-haired and blue-eyed (Mallory 1989:60). In Xinjiang province, a dramatic discovery was made in 1978 by a Chinese archaeologist, publicized in the West only recently (Haddingham 1994), of more than one hundred mummified bodies of "Caucasian" individuals with light brown or blond hair, dated by radiocarbon to 2000 BC to 300 BC.

⁵ Careful review by Brues (1977) of light eye variability in both human and animal populations in northernmost Europe, as well as experimental studies of iris and retinal pigmentation under low light conditions (Short 1975; Hoffman 1975) fail to identify specific selective advantage conferred by light eyes in the present day Scandinavian environment. Wald (1945), on the other hand, found laboratory evidence of greater visual acuity for light-eyed individuals in the shorter wave-length colors, violet to blue, than for dark-eyed individuals. Coon and Hunt (1965:236) therefore suggested that light-eyed Pleistocene hunters might have been able to distinguish distant objects more accurately than dark-eyed individuals in dim, misty light.

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a small group colonizing an uninhabited area and eventually developing into a large population).

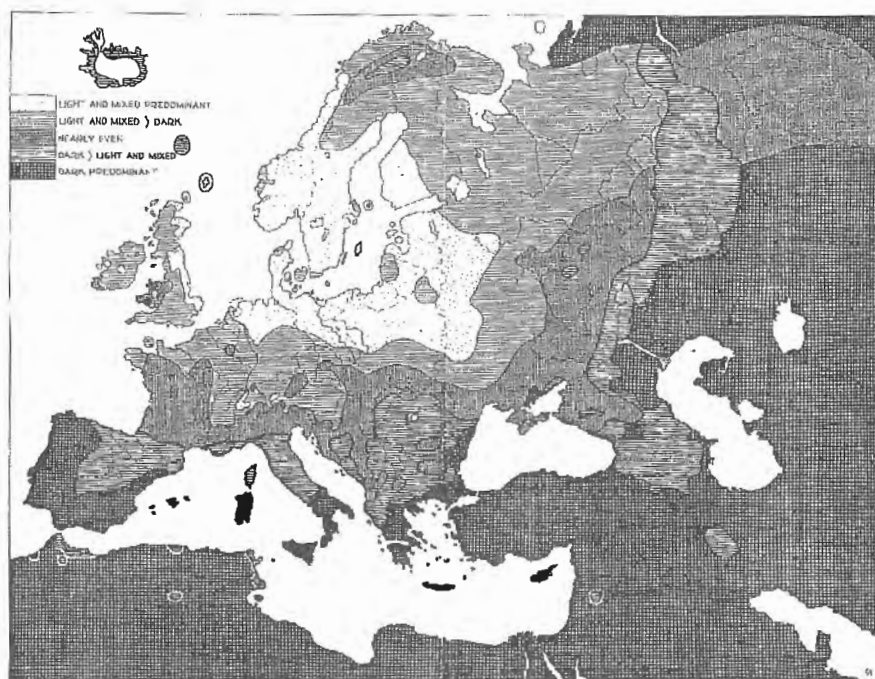


Fig. 1: Clinal distribution of hair and eye pigmentation in Europe and surrounding areas (after Coon 1939).

Shortly thereafter, the LEH cline seen in Figure 1 would have been evident.⁶ This cline is that which Coon (1939) established for pre-WWII European populations, and which will be adopted here. The general pattern of data is reliable in that the classification scheme was clearly defined. Categories of light and dark eye color are very simple. “Light” eyes refer to shades of blue and gray, “dark” eyes to

⁶ One of the earliest known archaeological findings of an individual with blond hair is from a well-preserved log coffin dating to the Early Bronze Age (1700-1500 BC) at the Trindhay excavations in 1861 near Vanrup, Aarhus district, Jutland.

shades of brown and black, and "mixed" eyes include green and distinctive mixed-color mosaic patterns. This classification, while inadequate for sophisticated population genetics, is sufficient for our purposes here.

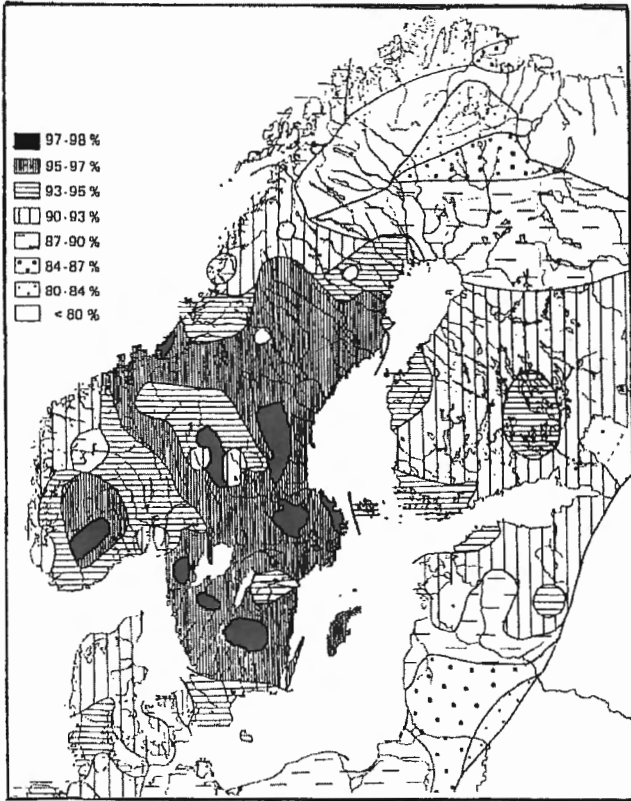


Fig. 2: Phenotypic frequencies of blue and light-colored eyes in the peri-Baltic (after Lundman 1940:fig.3).

Peri-Baltic LEH concentration

The highest phenotypic concentration of eyes of light color (>95%) in northern Europe is found in Sweden (Fig. 2). The frequency then declines on a gradient outward from this center, with sharp declines taking place to the northeast, among the Finno-Ugric speaking Sami (Lapps), and to the southeast, among the southern Balts.⁷

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Table 1 shows the lower frequencies of light eyes (54% to 76% - excluding the Sami) along the eastern coast of the Baltic. The lowest percentage of light eyes (35.3%) is found among the Sami, who also have the highest percentage of eyes of "mixed" color (51.3%), which includes green and mosaic patterns. A relatively low percentage of light eyes (56.3%) also characterizes the Baltic population of southern Lithuania, along with the highest percentage of dark eyes (22.9%) in the peri-Baltic. The substantial number of eyes of mixed color among the Balts and Balto-Finns is also of interest. The distribution of eye pigmentation, then, indicates the northeast and southeast peri-Baltic received substantial gene inflow deriving from areas much further south or southeast. This is discussed below.

In terms of general pigmentation, hair texture, and beard growth the Sami resemble to a large degree Ugrian-speaking Ostyaks and Voguls in the Urals (Gjessing 1934). Cavalli-Sforza (1991:110) describes the Sami as a case of large-scale gene replacement: "Their genetic pattern suggests a mixture between Mongoloid groups of Siberia and Scandinavians, who are responsible for the majority of their genes." An alternative view is by Lewin (1971, cited in Jacobs 1992:42) who proposes that the Sami have remained genetically isolated from their Scandinavian neighbors, until recently, because of religious and cultural proscriptions.

Penetration by ancestral Sami groups into southern Sweden is a complex subject under discussion. In the east peri-Baltic, however, it is clear that their past settlement reached far to the south. Archaeological evidence (Selirand and Tönnis 1984:48; Nosov and Ryabinin 1993) suggests that Sami populations, or, more specifically, Finno-Ugric-Lapponoids not yet divided into modern Sami speakers

⁷ The Lundman light eye data for the east peri-Baltic (showing a range of 80%-95%) appear to be somewhat high. Independent contemporary studies of light eye color in Latvia (Backman 1937) and Lithuania (Kazlauskas 1940), apparently not available to Lundman, are about 13% and 27% lower, respectively. Post WWII data from Estonia (Mark 1975) are 25% lower. Lundman's data for the western peri-Baltic appear to be more reliable — Lundborg and Linder (cited by Kazlauskas 1940:43) describe the eye color of Sweden as 87% light, 8% mixed and 5% dark.

and Balto-Finns, can be equated with the Neolithic Comb-Marked Pottery culture found throughout Finland, Karelia and southward through Estonia, Latvia and into northeast Lithuania. On the basis of new odontometric evidence from Olenii ostrov, a large Mesolithic cemetery near Lake Onega, Karelia, Jacobs (1992) proposes ancestral Sami were established here even earlier, by about 5500 BC.

Group	n	light (%)	mixed (%)	dark (%)
BALTO-FINNIC and LAPPIC				
Sami (Lapps)	201	35.3	51.3	13.4
Karelians	334	59.3	35.6	5.1
Vepsians	108	53.7	38.9	7.4
Finns	1,105	69	29	2
Aland Islanders (Swedes)	124	72.6	25.8	1.6
Chortsi	163	70.5	25.8	3.7
Estonians	1,282	66	31	3
BALTIC				
northern Latvians	7,275	75.2	12.5	12.3
southern Latvians	3,646	76.1	9.3	14.6
northern Lithuanians	137,263	59.2	21.6	19.2
southern Lithuanians	92,759	56.3	20.8	22.9

Table 1: Eye color in the east peri-Baltic

Within the Baltic group, light eyes are represented by shades of blue and gray, dark indicates brown and black and mixed includes green and mosaic patterns. Balto-Finnic and Lappic data from Mark 1975; Latvian data from Backman 1937; Lithuanian data from Kazlauskas 1940.

All of this suggests that in contrast to the western peri-Baltic, the lower frequencies of light eyes among the Balto-Finns (as well as the high rate of mixed and dark eyes among the Sami) reflect a Mesolithic-Neolithic substratum genetically linked to an ancestral "homeland" somewhere in the region stretching from Karelia to the central Urals.

Turning to the southeast Baltic region, the Lundman data (see Fig. 2) indicate that it is the terminus of not one, but two, decreasing LEH gradients in the peri-Baltic. One runs southward from Finland, the other eastward from Denmark. To verify this distribution, I developed a detailed clinal map of eye color frequencies for the Baltic populations of Latvia and Lithuania. As data, I used the huge sample earlier gathered by Kazlauskas (1940) representing 230,022 Lithuanian

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school children, together with Backman's sample (1937) of 10,921 Latvian soldiers.

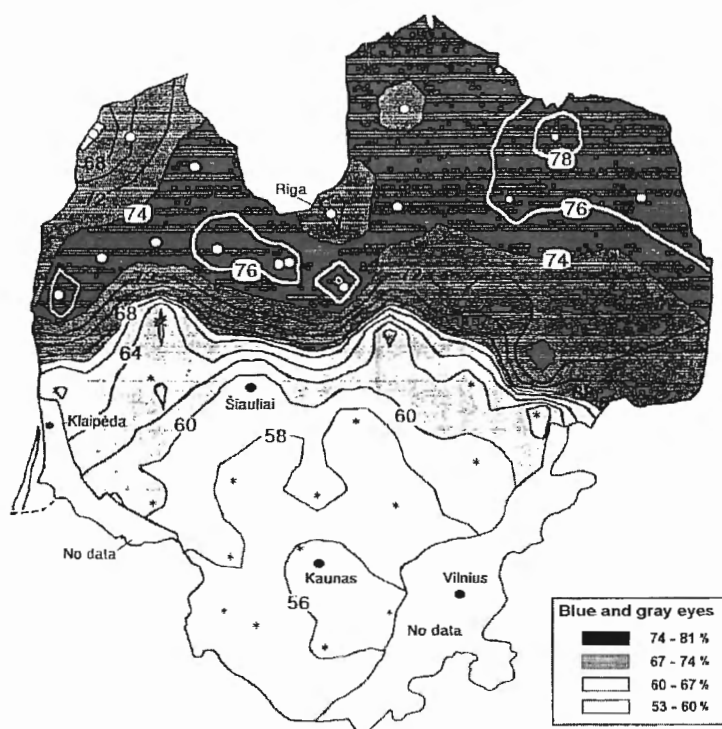


Fig. 3: Cline frequency of blue and gray eyes in Latvia and Lithuania (after Backman 1937; Kazlauskas 1940). Indicated are the thirty-two data points used in producing the cline.

Figure 3 shows a clearly defined gradient for light eyes, decreasing in frequency from northern to southern Latvia, and then from northern to southern Lithuania. A reverse gradient was discovered for dark eyes, which decreased in frequency moving from southern Lithuania to northeast Latvia. The highest concentration of brown eyes (23% to 25%) occurs in southernmost Lithuania, in an area adjoining eastern Belarus. This suggests the existence of a gateway, via the Nemunas and Dnieper rivers, for inflow of dark-eyed genes from the southeast. Archaeological and historical evidence indicate that this inflow took place sometime after the large scale Slavic

immigration of the mid first millenium AD.

From the standpoint of European Russia (see Alekseeva 1973 fig. 59a), the Balts represent the high point of a LEH cline which decreases in frequency moving to the southeast and east — through Belarus, the Ukraine and western Russia. Once again, this distribution reflects primarily the historical inflow of Slavic tribes from central Europe.

Central and southern Europe

Little is known about the eye and hair pigmentation of pre-Indo-European inhabitants of central and southern Europe. Archaeological and Classical written sources suggest that in the first millennium BC central Europe had mixed LEH frequencies, perhaps not unlike those of today (Fig. 1), and that southern Europe was dominated by a dark eye and hair (DEH) population, as at present. Of course, early Iron Age Europe represents a period already two millennia after initial Indo-Europeanization.

Blue "eye beads," common Hallstatt burial items in Austria and Hungary (sixth-fifth centuries BC), presumably reflect the eye color of the Celtic people who wore them. The Getian-Dacians and Thracians who inhabited present day Rumania are described by Classical writers as resembling the Celts and Germans of northern Europe in being light-eyed and fair-haired (Daicoviciu 1968:15). Living north of the Black Sea were numerous tribes of Scythians, but only the Budini living between the upper Don and the Kholer rivers (Utuenko 1956), are identified by Herodotus as having blue eyes and brown hair. It is unclear whether depictions of literally golden-haired Scythian warriors on silver drinking vessels found in the southern Ukraine, made by Greek craftsmen of the fourth century BC, reflect chance placement of gilt ornament, or alternatively, an attempt by the artisan to indicate blond hair.

The evidence of hair and eye color from southern Europe is also ambiguous. Much of the pre-WWII literature on the subject served Nazi propaganda goals of "documenting" an ancient Aryan blond race. For example, a survey by Sieglin (1935) of the hair color of Greek individuals described in Classical literature allegedly found 109 blonds and only thirteen brunettes. This seems highly unlikely — why would ancient Greeks have a higher rate of blondism than any Scandinavian nation? To the contrary, of the thousands of individuals portrayed in a relatively naturalistic style on ancient Greek painted vases, the vast

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majority appear to be dark-haired. Old individuals are sometimes depicted with white hair,⁸ and a very small number of fair-haired young individuals are shown.⁹ While it is true that artistic conventions of Black and Red Figure technique were not overly concerned with naturalistic depiction of hair color, this does not necessarily exclude the possibility that vase painters did in fact realistically portray the dark haired population they saw around them.

Dark hair is also common to most of the hundreds of individuals portrayed in Etruscan tomb frescoes. One exception is the well known painting of a male with long blond hair, dancing with a dark-haired female, in the so-called Tomb of the Lionesses (540-530 BC) at Tarquinia.

Northward migration from southern Indo-European homelands

The hereditary mechanism for eye pigmentation is not well understood. Contrary to widespread belief, "blue" and "brown" eyes are not examples of single-locus recessive and dominant alleles. Rather, the many shades of iris color indicate a polygenic mechanism (i.e. several loci affect a single trait). Brues (1977:103) suggests that uniform brown shades — the typical eye color of most human populations — are probably dominant over the less frequent light and mixed shades. Bräuer and Chopra (1978:111), on the other hand, in comparing correlation coefficients of eye color between sibs versus those of parent-offspring find no evidence of dominance.

Polygenic inheritance can be illustrated by the mating of a pair of brown and blue eyed homozygous individuals, assuming eye color is controlled by a three locus gene, resulting in offspring of intermediate heterozygotic expression (shades of brown, green, gray and mixed-color eyes). Cross-mating of later generations will also result in largely intermediate heterozygotes, with a very low percentage of the original homozygous genotypes being expressed.

$$\begin{array}{ll} \text{P:} & B^1B^1B^2B^2B^3B^3 \times b^1b^1b^2b^2b^3b^3 \\ \text{F1:} & B^1b^1B^2b^2B^3b^3 \end{array}$$

⁸ Boardman 1974: figs. 143, 254; 1975: figs. 245.1, 248; 1989: figs. 7, 164, 176, 244.1.

⁹ Boardman 1974: fig. 313; 1975: fig. 34; 1989: fig. 324.1; Robertson 1992: figs. 64, 73, 89.

Because this model does not explain the existing high frequencies (85% to 98%) of blue eye phenotypes in much of the peri-Baltic, it forces us to conclude that the initial inflow of homozygous dark eye genotypes was very low. I present this simplified model as a counterweight to genetically improbable scenarios proposed in the Indo-European literature: e.g. "the blue-eyed, blond-haired Nordic must still be regarded as the product of interbreeding between the [Anatolian — R.S.] Indo-European invaders and their predecessors in the settlement of Europe" (Gamkrelidze and Ivanov 1990:116).

I have suggested that the LEH cline in Europe was already well established by the early Mesolithic, and have shown through clinal patterning and a genetic model that this gradient has remained largely "undisrupted," particularly in the peri-Baltic. All of this argues against direct large-scale gene inflow (i.e. waves of advance) into Neolithic northern Europe by DEH Indo-European speaking groups from southern latitudes.

Figure 4 compares five currently proposed Indo-European homelands with the clinal distribution of average amount of ambient u-v radiation. As discussed, the lower the level of u-v radiation in an area, the more likely that early adaptive populations had very light pigmentation. The map shows that homelands 1 and 5 (northern Europe and the Pontic-Caspian) receive an average of 100-200 watt-seconds (w-s) of u-v radiation per square centimeter; homeland 3 (Balkans-Danubian Basin) receives 200-250 w-s and homelands 2 and 4 (southern and eastern Anatolia) are within a zone receiving an average 250-300 w-s. In comparison, those regions of Africa with the darkest-skinned populations receive about 375-425 w-s. This means that the amount of u-v radiation received in Anatolia represents an approximate midpoint between tropical Africa and the peri-Baltic.

We do not know the pigmentation of early populations adapted to the Anatolian environment, because its current demography overwhelmingly reflects the Turkic tribes who began to migrate into the region by at least the first millennium AD. In terms of u-v radiation, however, Neolithic pre-Turkic Anatolians — if they represented a traditional population adapted to the local environment — were not likely to have had high frequencies of very lightly pigmented skin, or its frequent correlate, light eyes and hair. It is far more probable that Neolithic inhabitants of homelands 2 and 4 represent DEH populations. The "intact" LEH cline argues against DEH

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inhabitants from either of the two homelands dispersing into northern Europe through large scale migration and population displacement.

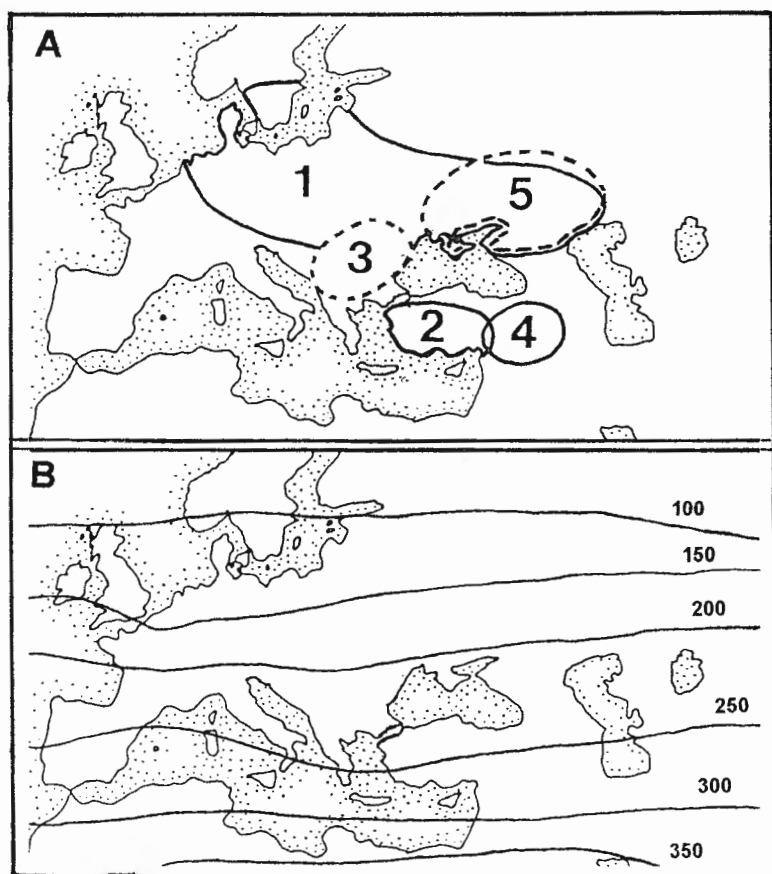


Fig. 4: Comparison of: A) Five currently proposed IE homelands (after Mallory 1992:fig.1) and B) Average amount of ultraviolet radiation in watt-seconds per square centimeter (after Kottak 1991:fig. 5.1).

In sum, Mesolithic populations adapted to the conditions of homelands 1 and 5 are likely to have had high frequencies of LEH individuals. Thus, large scale population movements from these regions (cf. Kilian 1983; Gimbutas 1991) remains possible, in that they

would not have produced clinal patterns different from those which in fact are observed today. No inference can be made about homeland 3 (D'iakonov 1985). Large scale migration from homelands 2 (Renfrew 1987) and 4 (Gamkrelidze and Ivanov 1985) would have produced eye and hair color patterns different from those which exist in northern Europe today. If, however, the emphasis is on small-group processes of genetic and/or linguistic spread, any of the homelands seen in Figure 4 are viable candidates.

Eye color and mating bias

A genetic mechanism that could have helped to maintain high LEH phenotypes in northern Europe is assortative mating, or consistent mating bias in favor of the (possibly) recessive genotype. If, however, northern Europeans did have a consistent tendency to prefer light-eyed individuals as potential mates, then the hypothesized "intrusive" DEH inflow discussed earlier would have been of a higher order of magnitude (in order to account for existing DEH frequencies).

Modern studies of eye color in Sweden and hair color in a Sami group (Nelson and Jurmain 1991:123), as well as eye color in western Germany (Bräuer and Chopra 1978), have shown significant correlation among married couples. Cultural beliefs relating to eye color in traditional Lithuanian villages also support the idea that eye color may have been a factor in assortative mating. At the same time, it must be noted that value systems of peasant and state level societies may have little in common with those of early Indo-European farmers.

A great deal of attention was paid to eye color by Lithuanian peasants, as it was thought that it revealed much about an individual's character.¹⁰ Blue eyes usually had a positive association in the context of folk songs and sayings, whereas brown eyes are often described as

¹⁰ The Lithuanian word for 'iris', *rainelė*, derives from *rainas*, meaning 'variegated' or 'streaked' (Fraenkel 1965:686). This is a remarkably precise description of the fine mosaic variegation that is present in the iris color of many light-eyed individuals (Brues 1977:102). Petras Avižonis, an ophthalmologist with a serious interest in Lithuanian linguistics, was perhaps the first to use the term in the medical literature (Avižonis 1929). It is unclear, however, whether he was recording a traditional folk term, or coined the word himself. It is known that he made it a life-long practice to question his patients about regional words related to eye diseases (Puzinas 1979:87-89).

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“angry,” “fierce” or “dog’s eyes.” They were feared, especially when the individual also had brown hair (Kazlauskas 1940:44). The social discrimination that existed against dark eyes was generally associated with the phenomenon of the “evil eye.” This tradition — which continues to exist in rural Lithuania to this day — is documented by Dundulienė (1992).

In Lithuania, and throughout much of eastern Europe, it was believed that certain individuals, or even animals, possessed an “evil eye” of supernatural power, whose stare could lead to the withering of crops, the inability of cows to produce milk, the spread of illness, and other misfortunes. Anyone, including light-eyed individuals, whose eyes gave the impression of being uncommonly lively, bright, or hard was suspected of having the evil eye. Particularly suspect were dark-eyed individuals such as gypsies, “Hungarians” (a generic term for central Europeans), as well as people with unusual abilities or lifestyles, including musicians (who were often Jews), traveling entertainers with tame bears, blacksmiths and passing beggars.

Defense against the evil eye involved the apotropaic use of various plants (onion, garlic, rowan, nettles), sharp objects and nets. A homeowner who spotted a person with the evil eye entering his cabin could avert the danger by saying: “An ember in your teeth, salt in your eye.” Similarly, a farmer, noticing a suspicious individual staring at his animals, was quick to say: “You should rather go stare at a dog’s tail,” or, “Today is Monday (i.e. mentioning the actual day), don’t stare, you may have a harmful stare.”

Dark-eyed individuals associated with the evil eye apparently were convenient scapegoats to “explain” a spectrum of problems common to every village. It is not unlikely that social ostracism made it difficult for them to find mates. In contrast, the idealization of light eyes and hair contributed to positive assortative mating based on these features.

Conclusions

Running across northern Europe is a well defined genetic gradient of lightly pigmented eyes and hair, probably established by the early Mesolithic. It is not known if LEH traits were neutral or had direct adaptive value (as did their correlate, lightly pigmented skin). The high concentration of light-eyed individuals, particularly in the peri-Baltic, suggests that initial inflow of homozygous dark-eyed individuals in ancient times was very low — otherwise there would be

today a much greater expression of heterozygous dark and mixed-color eyes. A counter-argument can be made that substantial DEH inflow did take place, but was not genetically maintained because of later mating bias in favor of LEH phenotypes. Admittedly, some support for this view can be found in certain modern mating patterns, as well as in traditional folk beliefs in northern Europe. On balance, however, I conclude that DEH inflow was minimal (with the exception of the northeast and southeast peri-Baltic) and that the LEH gradient has remained largely "undisrupted," from the Mesolithic up to the present.

I want to make it clear that I am not proposing early Indo-European populations can be "identified" through LEH pigmentation. Rather, in comparing zones of low ultraviolet radiation (a rough correlate of very light pigmentation) with the location of currently proposed Indo-European homelands, I demonstrate that pre-Turkic Anatolians — if adapted to the local physical environment — were not likely to have had high frequencies of light eyes and hair. This argues against large scale migration of early Indo-Europeans moving directly from a southern homeland, such as Anatolia or Armenia, and demographically displacing a pre-Indo-European population of Northern Europe. At the same time, the existing LEH cline does not preclude the idea of Indo-European languages being transmitted by small groups — through farming, elite dominance, trading stations or border pidginization — coming from Anatolia, southern Europe or some other homeland. As Renfrew (1987) has emphasized, it is through the investigation of cultural process, rather than simple assumptions of mass migration, that archaeologists can help resolve the Indo-European problem.

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